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VIRTUAL EVENT

27-28 APRIL 2023

INTERNATIONAL SUMMIT ON HEMATOLOGY AND BLOOD DISORDERS

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BOOK OF ABSTRACTS

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ABSTRACTS

INTERNATIONAL SUMMIT ON

HEMATOLOGY AND BLOOD DISORDERS

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Welcome Message

Dear congress visitors, it is an honor and pleasure to invite you to this meeting which is focused on hematology. There has been remarkable progress in this area, which is both of fundamental and clinical importance, resulting from the application of modern molecular technologies as well as a holistic approach to disease causation and treatment. Several aspects of this progress will be covered at this meeting. These encompass, clonal tracking and gene therapy; role played by pharma industry and others in new drug discovery; myeloma and other hematologic malignancies; studies on model organisms; and transplantation biology. Collective presentation and discussion of these and other hematological topics by highly qualified researchers in one time and place is certain to point the way for future directions and progress in this field.

A.C. Matin Ph. D

Stanford Medical School, USA

Keynote Speakers

Stefan Guck
Global Medical Affairs at Celgene Corporation, USA

A C Matin
Stanford Medical School, USA

Joan Lluis Vives Corrons
Institute for Leukaemia Research Josep Carreras, Spain

Jie Xu
The University of Texas MD Anderson Cancer Center, USA

Reena Nair
Tata Medical Center, India

Ahmed N Ghanem
Mansoura University, Egypt

Thank You All...

ABOUT
MAGNUS GROUP

Magnus Group (MG) is initiated to meet a need and to pursue collective goals of the scientific community specifically focusing in the field of Sciences, Engineering and technology to endorse exchanging of the ideas & knowledge which facilitate the collaboration between the scientists, academicians and researchers of same field or interdisciplinary research. Magnus Group is proficient in organizing conferences, meetings, seminars and workshops with the ingenious and peerless speakers throughout the world providing you and your organization with broad range of networking opportunities to globalize your research and create your own identity. Our conferences and workshops can be well titled as 'ocean of knowledge' where you can sail your boat and pick the pearls, leading the way for innovative research and strategies empowering the strength by overwhelming the complications associated with in the respective fields.

Participation from 90 different countries and 1090 different Universities have contributed to the success of our conferences. Our first International Conference was organized on Oncology and Radiology (ICOR) in Dubai, UAE. Our conferences usually run for 2-3 days completely covering Keynote & Oral sessions along with workshops and poster presentations. Our organization runs promptly with dedicated and proficient employees' managing different conferences throughout the world, without compromising service and quality.

ABOUT
HEMATOLOGY 2023

Magnus Group takes honor and great opportunity to invite you to the “International Summit on Hematology and Blood disorders” (Hematology 2023) scheduled as an Online Event during April 27-29, 2023. Hematology 2023 offers a great international multidisciplinary platform bringing together the professionals, researchers and world class scientists from Hematology researchers and potential investigators. We encourage you to take part in this conference as there will be Keynote address to Oral and Poster presentations with the discussions focused on diversified scientific sessions ranging from basic cell science to advanced innovations in the field of Hematology with novel and sophisticated applications for the betterment of healthcare.

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27-28 APRIL

DAY 01

KEYNOTE FORUM

INTERNATIONAL SUMMIT ON

HEMATOLOGY AND BLOOD DISORDERS

Hereditary hemolytic anemia's due to red blood cell membranopathies rheological and genetic approach

Hereditary Red Blood Cell (RBC) membranopathies are characterized by mutations in genes encoding skeletal/lipid bilayer proteins that alter the membrane complex structure. Hereditary Spherocytosis (HS) is the most common inherited RBC membranopathy, leading to hereditary hemolytic anemia with a worldwide distribution and an estimated prevalence in Europe of about 1:2,000 individuals. The recent availability of targeted Next Generation Sequencing (t-NGS) and its combination with RBC deformability measured with a Laser-Assisted Optical Rotational Ektacytometer (LoRRca) has demonstrated to be the most powerful contribution to lower the percentage of hereditary hemolytic anemia undiagnosed cases. The osmoscan module of LoRRca provides three rheological parameters that reflect the maximal deformability (EImax), osmotic fragility (Omin), and hydration state (Ohyper) of RBCs and contribute to a better understanding of the contribution RBC rheology to the severity of anemia. In order to know the kind and frequency of RBC membrane mutations in our geographical area (Catalonia) and to better understand their pathophysiology, a cohort of 161 unrelated Non-Transfusion-Dependent (NTD) patients with Hereditary Hemolytic Anemia (HHA) have been studied by combining t-NGS and LoRRca. Hemoglobinopathies and erythroenzymopathies were discarded by standard laboratory procedures. From these 161 patients, 93 were phenotypically suspected to be a RBC membrane defect (HS in 73, hereditary elliptocytosis in 15, and hereditary xerocytosis in 5) and 68 exhibited an inconclusive phenotype. Using t- NGS, the mutation was identified in 84 out of 93 patients (90%) and in 51 out of 68 patients (75%). A total of 26 out of 161 patients (16%) remained undiagnosed. In all the cases, the osmoscan module of LoRRca contributed to a better understanding of the contribution of RBC rheology to the severity of anemia

Audience Take Away Notes

- Can be used by other faculty to expand their research or teaching
- Will provide a practical solution for simplify questions and/or for make job more efficient
- Will it improve the accuracy of a design or provide new information

Joan Lluis Vives Corrons*, Elena Krishnevskaya

Red Blood Cell and Hematopoietic Disorders Research Lab Institute for Leukaemia Research Joseph Carreras Badalona (Barcelona). CATALONIA (Spain)

Biography

Prof. Joan Lluis Vives Corrons is Emeritus Professor at the University of Barcelona (Catalonia) and Research Leader at the Red Cell Pathology and Hematopoietic Disorders Unit at the Institute for Leukaemia Research Joseph Carreras (IJC). Head of the Hematology Department at the Hospital Clinic of Barcelona (1976-1997) and head of the Red Blood Cell Pathology Unit at the same Hospital (1998-2016). Research topics have been the hereditary red blood cell defects (hemoglobinopathies, membranopathies and erythroenzymopathies). He has published more than 600 papers in scientific journals and has edited or participated in 20 hematology books. Since 2002, Prof.Vives Corrons is the coordinator of the European Reference Network for Rare and Congenital Anaemias (ENERCA).

Improving outcomes of curable lymphoma in resource constrained regions

Despite a low incidence of lymphoma, mortality remains high in Low/ Medium HDI countries. The possible reasons include–limited access to tertiary cancer or specialized centres, and lack of trained pathologists. Patients present with advanced stage disease, lack of financial support for standard treatment, resulting in early treatment and follow up drop outs, difficulty in accessing second line therapy at relapse and physician reluctance to treat elderly lymphomas with a curative intent. Data maintained in Hospital Management System (HMS) from 2011 to 2019 was used to study clinical presentation as well as the outcomes of standard therapy for patients with Hodgkin Lymphoma (HL) and Diffuse Large B-Cell Lymphoma (DLBCL), availability of newer therapies for relapsed and refractory lymphomas. HL and DLBCL present with B symptoms in up to 50% and advanced stage disease in > 50%. Real world outcomes of adult HL (≥18 years) suggests 94.7% patients receive standard first line therapy is Adriamycin, Bleomycin, Vinblastine and Dacarbazine (ABVD) with 5-year Event Free Survival (EFS) of 85.4% and 74.6% for early and advanced stage. This compares well with outcomes reported from the developing world. However there is a significant drop in adherence to follow-up in the first two years post completion of treatment increasing the risk of late presentations of relapsed disease and increased mortality. 75% relapsed and refractory HL received salvage therapy and 23% underwent the recommended high dose chemotherapy and Auto Stem Cell Transplant (ASCT). Brentuximab vedotin therapy was given in a small group who could afford the treatment “out-of-pocket”. The outcomes compare well with the data from transitioned countries.

Abbreviated chemotherapy cycles and omission of radiotherapy for earlystage DLBCL, adversely impacted the 3-year Event Free Survival (EFS). Reducing therapy should be limited to a select group of patients who undergo adequate staging with PET-CT scans at diagnosis and response assessment. This information is significant since the option of salvage treatments is available to < 50% of relapsed DLBCL patients and high dose chemotherapy with ASCT is feasible in < 10% adult patients. Most clinicians in a busy practice setting with concerns of comorbidities, frailty and disproportionate toxicity in the older patients tend to reduce dose and use less intensive or abbreviated regimens, impacting the outcome. A retrospective study helped understand the magnitude of the challenges. Careful co-morbidity and performance status assessment, cross-consultation with specialty colleagues regarding comorbidity management prior to definitive therapy, use of pre-phase therapy and generic growth factors, and use of age and fitness appropriate regimens shows improved outcomes for older patients treated with appropriate dose intensity. Over 80% of people in India have no medical insurance. Bio similar rituximab have been a game changer in the treatment of

Reena Nair*, Pranita Mishra, Arijit Nag, Saurabh Bhave, Jeevan Kumar, Vivek Radhakrishnan, Mammen Chandy

Department of Clinical Hematology, Tata Medical Center, Kolkata, West Bengal, India

Biography

Dr. Reena Nair did MB; BS and MD [Internal Medicine] at Goa Medical College [1979-1988]. Pursued Medical Oncology Residency [1989-90] and Fellowship [1992-1994] at Tata Memorial Hospital, Mumbai, India and worked as Medical Oncology Faculty [Lecturer to Professor] at Tata Memorial Hospital, from 1994 to 2012.

She has been a Principal Investigator in 35 Clinical Trials [Investigator initiated as well as Industry sponsored trials]. She has served as the Executive Committee Member and Faculty at Australia and Asia Pacific Clinical Oncology Research Development (ACORD) Workshop from 2010 to 2018.

She is an International Scientific Advisor to The Lancet Hematology 2020-2022 and a Guest Editor, “Lymphoma Outcomes from India” for Frontiers in Oncology 2021-2022. She has published over 125 papers and 15 book chapters, and her Current Interest is in Management of Hematological cancers, with special interest in Lymphoma Outcomes.

B-cell non-Hodgkin lymphoma in India. Our experience makes us believe that biosimilars and generic medicines can contribute towards improving outcomes of cancer patients.

Audience Take Away Notes

- Importance of regular audits of data to improve on outcomes of patients
- Health Care workers in Low and Middle Income countries can incrementally improve outcomes of Lymphomas
- Yes this research that other faculty could use to expand their research or teaching
- Yes this provide a practical solution to a problem that could simplify or make a designer's job more efficient

Immuno-Oncology (IO): 2023 and beyond

The idea of using the immune system to fight cancer is over 100 years old. (Paul Ehrlich's "Magic Bullet"). A new molecular approach over the last decade or so, led to a better understanding of the immune system. Our focus became the T cell, its development and efficacy to combat cancer, Understanding of immune check point regulation, antagonistic and agonistic in nature (over 20 are now described), development of CAR-T cells, as well as regulation of dendritic cells, B-cells and macrophages, has led to rational clinical development of novel compounds. Immune Checkpoint Inhibitors (ICI) are currently approved for successful use in many malignant diseases. PD-1 / PDL-1, MSI high (and DMMR), MTB, TILs and other biomarkers are currently "best" predictive markers for IO therapy. Most tumors e.g. malignant melanoma or non-small cell lung cancer show excellent efficacy of ICI with single agent use. In order to further improve the efficacy of ICI, the addition of chemotherapy, combination with other IO agents and novel strategies are under vigorous clinical investigation. Oncolytic viruses, cancer vaccines, use of a balanced microbiome are additional areas under investigation. We will discuss some of these approaches and show selected currently available results.

Stefan Gluck

Global Medical Affairs at Celgene Corporation, USA

Biography

MStefan Gluck, MD, PhD, FRCPC is medical oncologist and was V.P. Global Medical Affairs, at Celgene Corporation since October 2014 until December 2019. He oversaw oncology activities worldwide, as well as the Immuno-Oncology program in solid tumors and hematology. He also contributed to activities of Celgene around Early Assets. He previously served as a Sylvester Professor in the Department of Medicine at Miller School of Medicine, University of Miami, Florida until September 2014. From 2003–2008, he was the Clinical Director of the Braman Family Breast Cancer Institute, and from January 2009 - December 2010 Assistant Director of the Sylvester Comprehensive Cancer Center and Associate Chief, Division Hematology & Medical Oncology. He has been a PI of 37 clinical studies of breast cancer in Miami, as well as investigator in numerous scientific, translational projects. Before his move to Miami, Dr. Gluck was Director of Southern Alberta Breast Cancer Program at the Tom Baker Cancer Center, a Professor in the departments of oncology, medicine, pharmacology & therapeutics at the University of Calgary, Alberta, Canada, and Deputy Head, Dept. of Oncology at the University of Ca gary. He completed his medical studies at the Free University of West Berlin, Germany. The internship in Berlin was followed by residency in internal medicine and fellowship in hematology at the Heinrich Heine Universität in Düsseldorf, Germany, and a medical oncology & bone marrow transplant fellowship at the Princess Margaret Hospital, University of Toronto, Canada. Dr. Gluck was presented the "America's Top Oncologists" 2008 award from Consumers' Research Council of America, as well as "Best Doctors in America" honor since 2006, and has annually earned that prestige every year to 2014. This award was warranted after less than 3 years of working in the USA. He has authored or co-authored over 275 articles. In addition, Dr Gluck has written or co-written several book chapters and numerous abstracts and has presented more than 500 papers at national and international meetings.

PD-L1 Expression in anaplastic large cell lymphoma

The Programmed Cell Death 1 (PD-1) pathway is a recently recognized mechanism of tumor immune evasion. In our study, Programmed Cell Death Ligand 1 (PD-L1) expression was evaluated in patients with systemic anaplastic large cell lymphoma: including ALK+ and ALK-negative cases. ALK+ Anaplastic Large Cell Lymphoma was more often positive for PD-L1 than ALK-negative Anaplastic Large Cell Lymphoma. ALK-negative Anaplastic Large Cell Lymphoma showed a strong correlation between PD-L1 expression and STAT3 activation. In contrast, the PD-L1/pSTAT3 correlation was weaker in ALK+ Anaplastic Large Cell Lymphoma. In ALK-negative Anaplastic Large Cell Lymphoma, the PD-L1+ subgroup was more often EMA positive and tended to be less often CD2 positive. In ALK+ Anaplastic Large Cell Lymphoma, PD-L1 was not associated with pathologic features. Negative ALK status and high IPI score (> 3) were associated with shorter overall survival. Overall survival was not different between patients with PD-L1+ versus PD-L1-negative Anaplastic Large Cell Lymphoma, regardless of ALK status and International Prognostic Index (IPI) score. We conclude that PD-L1 expression is more common in ALK+ anaplastic large cell lymphoma than ALK-negative Anaplastic Large Cell Lymphoma. In ALK-negative Anaplastic Large Cell Lymphoma, PD-L1 is strongly correlated with STAT3 activation and is associated with more frequent EMA and less frequent CD2 expression. PD-L1 has no prognostic significance in predicting the outcome of patients with systemic anaplastic large cell lymphoma, regardless of ALK status. PD-L1 expression on the anaplastic large cell lymphoma cells suggests these patients as potential candidates for PD-1 blockade immunotherapy.

Audience Take Away Notes

- PD-L1 expression is high in ALK+ ALCL and relatively lower in ALK-negative ALCL
- PD-1 immunotherapy may be used in treating patients with ALCL
- The underlying mechanisms of PD-L1 expression in ALCL needs further investigation

Jie Xu

The University of Texas MD Anderson Cancer Center, Houston, TX, USA

Biography

Dr. Jie Xu has received her MD from Hubei Medical University and PhD from University of Alabama at Birmingham. She is currently an associate professor at the University of Texas MD Anderson Cancer Center. She is board certified by the American Board of Pathology in Anatomic Pathology, Clinical Pathology, and Hematology. In addition to clinical responsibilities, Dr. Xu has been actively participating in multiple research projects, leading to more than 120 papers. Her research has been supported by multiple funds. She serves as members of editorial boards for 5 journals and ad hoc reviewers for 16 prestigious journals.

The complete evidence that Starling's law responsible for many errors and misconceptions on fluid therapy in shock is wrong: The correct replacement is the hydrodynamic phenomenon of the porous orifice (G) tube

Introduction and objective: To report the hydrodynamic of a porous orifice (G) tube as replacement for the wrong Starling's law.

Material and methods: Hydrodynamics of the G tube, based on capillary ultra-structure, were studied. The effect of changing G tube orifice diameter, proximal pressure and distal pressure on the side pressure and chamber (C) pressure were evaluated. The physiological proof that the capillary works as G tube not Poiseuille's tube is provided.

Results: Hydrodynamics of the G tube showed that proximal, akin to arterial, pressure induces a negative side pressure gradient on the G tube wall, which is negative causing suction maximum near the inlet and turn positive near the exit causing filtration. This created the rapid, autonomous magnetic field like fluid circulation phenomenon between G and C. The physiological evidence on the hind limb of sheep proves that the capillary works as G tube.

Conclusion: Hydrodynamic of the G tube challenges the role attributed to arterial pressure as a filtration force in Starling's law. A literature review shows that oncotic pressure does not work, and the law has failed to explain the capillary–ISF transfer. A concept based on the new hydrodynamic phenomenon of the G tube is proposed to replace Starling's law. A rapid autonomous dynamic magnetic field-like G–C circulation occurs. Factors which initiate, regulate, and affect the G–C circulation; its physiological proof and relevance to clinical importance are given. Physiological evidence on capillary working as G tube not Poiseuille's tube is provided.

Keywords: Capillary physiology, Starling's law, Poiseuille's tube, Hydrodynamics of the porous orifice (G) tube.

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Biography

Dr. Ahmed Nasr Ghanem, MD (Urol.), FRCSEd was educated in Egypt and MBBCh qualified in 1974, Mansoura University, Egypt. He spent his i ternship at Mansoura University Hospitals. He gained all postgraduate experience in United Kingdom where he was promoted in posts up to the consultant level. He practiced as consultant Urologist in the Uinted Kingdom, Saudi Arabia, and Egypt. During his career life he attended many conferences and won the award of Princes Alexandra Memorial Award and reported over 150 articles of which he made important discoveries in medicine, physiology, urology, nephrology, cardiovascular and surgery. He di covered two new types of vascular shocks, proved that one physiological law is wrong and provided the correct replac ment. He resolved the puzzles of 4 clinical syndromes: The Transurethral of The Prostate (TURP) syndrome, acute dilutional hypernatremia, the Adult Respiratory Distress Syndrome (ARDS) and the Loin Pain Haematuria Syndrome (LPHS). Now he is happily retired in Egypt and the United Kingdom dedicating his time to writing scientific medical articles and editorial board member for many Journals. He was the Editor in Chief for Surgical Medicine Open Access Journal (SMOAJ).

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DAY 01

SPEAKERS

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Francis Ajeneye
Princess Alexandra Hospital NHS Trust Hamstel road, Harlow CM20 1QX
United Kingdom

Achieving 100% blood traceability compliance: A United Kingdom district hospital experience

The National blood transfusion center gives its utmost priority to safe blood transfusion and this is done through monitoring all the threats that can be transmitted through blood transfusion. Safe blood transfusion depends on efficient testing techniques for blood donors and an effective traceability system in place to trace donors to recipients and vice versa. The prescription, distribution and transfusion of blood and its components is a complex process within the transfusion chain, traceability compliance of this whole process remains a legal requirement for all blood bank and establishment in the United Kingdom.

This presentation will provide how the District Hospital achieved 100% traceability compliance after these major changes of the transfusion process were implemented.

Audience Take Away Notes

- It is a legal requirement in the U.K to trace all blood products different models of tracking blood components
- Current practice of traceability compliance Lesson learnt from poor traceability compliance

Biography

Dr. Francis Ajeneye, is a Chartered Scientist, member of the British Blood Transfusion Society, a Fellow of Institute of Biomedical Sciences and a Certified American Medical Technologist. His research interest has generated publications, including refereed journal articles, posters in professional journal and conference proceedings nationally and internationally. He is an active speaker at international meetings with areas of interest around - Traceability compliance models, tracking systems in blood transfusion, haemovigilance, alternatives to Blood Transfusion, safety barriers and error management in the blood transfusion. He continues to promote the appropriate use of blood and its products, an advocate for Quality Management Systems and Evidence-Based Research in Transfusion Medicine.

Dr Ajeneye continues to build and maintain scientific knowledge on blood products and therapeutics by providing scientific and technical support for professional bodies, maintain credible, professional relationship, support teaching of Biomedical Science in the United Kingdom University and a reviewer for international journals.

Xing Cui[1*], Manya Yu[2]

[1]Department of Oncology and Hematology, the Second Affiliated Hospital of Shandong University of Traditional Chinese Medicine, Jinan, Shandong Province, China

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LncRNA MALAT1, post-transcriptionally stabilized by NSUN2-mediated M5C modification, exerts properties in bone lesions formation in multiple myeloma

Multiple Myeloma (MM) is still an incurable disease and osteoclast-mediated bone destruction is a hallmark. Existing agents effectively reduce the number of osteoclasts (OCs) and prevent bone-related diseases but have little effect on overall survival. Investigating the potential mechanisms and developing novel agents against bone lesions are essential. Our study found that lnc MALAT1 expression was the highest in exosomes derived from MM cells, and it was significantly increased in MM cells compared with normal plasma cells in the GSE24080 and GSE5900 MM patient cohorts. The FISH examination revealed an obvious abundance of MALAT1 in bone marrow of MM patients. To demonstrate whether MALAT1 in U266 cells acts on macrophages via incorporating into exosomes, we labeled isolated exosomes with PKH26 dye and MALAT1 with GFP from U266 cells. The majority of the recipient cells exhibited a yellow signal in cytoplasm under the confocal microscope, suggesting that MALAT1 could be packaged into exosomes and swallowed by RAW264.7 cells. We directly influence MALAT1 expression in RAW264.7 cells. Overexpression of MALAT1 could upregulate RANKL expression and increase TRAP-positive OCs and mineralized nodules, while the knockdown of MALAT1 showed a reverse trend. The ability of MM exosomes in bone destruction was then verified in vivo by injecting U266 cells, U266 cells plus MM exosomes, and U266 cells plus MALAT1-knockdown-exosomes into the tail vein of NOG mice. The extent of the bone disease in each model was assessed by micro-CT. Parametric analysis using MICROCT revealed a significant decrease in the bone volume (bone volume/tissue volume) by exosomes, while when injecting MALAT1-knockdown-exosomes, we observed a reverse trend. Recent studies focused on the function of RNA modification in regulating INCRNAS expression. We found that MALAT1 level was strongly correlated with NSUN2 (R^2=0.758) and YBX1 (R^2=0.748) levels. To test whether and how m5C modification regulates MALAT1 expression, U266 cells were transfected with SIRNA targeting NSUN2. Knockdown of NSUN2 significantly reduced the m5C levels of MALAT1. A rescue experiment showed that MALAT1 expression and stability increased by NSUN2 were reversed when transfected with YBX1 SIRNA.

Audience Take Away Notes

- LncMALAT1 was identified as the highest differentially expressed LNCRNA in U266 exosomes and promoted bone lesions formation
- Injection of exosomes increases MM-induced osteoclasts differentiation and bone lesions, possibly in part through MALAT1
- NSUN2-mediated m5C modification of MALAT1 increases its stability in a YBX1-dependent manner

Biography

Prof. Cui studied Clinical Discipline of Chinese and Western at Shandong University of Traditional Chinese Medicine and received his PhD degree in 2011 at the same institution. After two years postdoctoral fellowship supervised by Prof. Wang at Shandong University, focus on the development of treatment for lymphoma and multiple myeloma, he obtained the position of an attending doctor. He then joined the research group of Prof. Janz at the Department of Pathology, University of Iowa (America). Now, he runs a department of Oncology and Hematology and has published about 20 research articles in SCI (E) journals.

Diwakar Sharma*, Christine Wilson, Sachin Kumar, Sampa Ghose, Ranjit Kumar Sahoo, Surender K. Sharawat

Department of Medical Oncology, Dr. B.R.A.I.R.C.H, All India Institute of Medical Sciences, New Delhi, India

Tyrosine kinase inhibitor treatment leads to complete response in threeway variant of Philadelphia positive translocation (9; 15; 22) (Q34; P11; Q11) of chronic myeloid leukemia

Philadelphia (Ph) positive chromosome comprises 90-95% of Chronic Myeloid Leukemia (CML). The remaining 5-10% consists of intricate translocations that may involve a third chromosome. The impact of Tyrosine Kinase Inhibitor (TKI) treatment on the variant Ph Chromosomes is not known. In this study, we compiled all the reported cases of variants Ph Chromosomes (3 & 4-way translocations) and assessed their primary response as complete remission after TKI treatment. A fifty-five years old female with Bone Marrow (BM) with a history of Type-II Diabetes mellitus, hypertension, and severe acute corticosteroid Gastritis, was diagnosed as CML-CP with 46, XX, t (9;15; 22) (q34; p11; q11) bone marrow cytogenetics. Reverse Transcriptase Polymerase Chain Reaction (qPCR) was positive for e13a2 transcript for translocation BCRABL (p210) consisting of 39608.38 absolute ABL1 and 13693.7 absolute BCR-ABL1 copies [(BCR-ABL1/ ABL1) * 100 = 34.57%]. Furthermore, 92% of cells tested positive for BCR-ABL1 translocation by the Fluorescent In Situ Hybridization (FISH) method. The BM flow cytometric immunophenotyping analysis of CML-CP shows approximately 1.8% CD45 dim positive blasts which are CD7+, cCD3+, CD5+, and negative for CD4, CD8, CD2, CD56, and CD34. The spleen enlargement by 14cm in size and no mutation was detected in the BCR-ABL1 kinase domain. The patient's hematological analysis revealed WBC of 3730 cells/µl, decreased hemoglobin levels of 8.8 g/dl, ANC: P57.3L28.2M7.6, Blood Urea/ Creatinine: 24/ 0.62, Calcium/ Phosphate: 8.8/ 4.0, Uric acid (mg%): 3.2, Na+/ K+: 137/ 4.8, Bilirubin (mg%): 0.6, A/G Ratio: 4, SGOT/ SGPT: 37/ 67, Alk Phos. (Units): 235(<116), S. lipase: 177(<300), and HbAc: 8.7%. Post imatinib mesylate induction, BM was in hematological remission, qPCR ratio (BCR-ABL1/ ABL1) * 100 was 8.55% [transcript major (p210) and minor (p190)] with a CML-CP Sokal index of 0.9. Hematopoietic cells of all series (M: E: 4: 1) were seen in the cellular BM preparation, along with 1-2% blasts. In the literature, only 18 cases were reported with 3 (15/18) and 4 (3/18) way BCR-ABL1 translocation. Amongst the 15 cases of 3-way BCR-ABL1 translocation, TKI response data were reported in 11 patients. All patients with 3- and 4-way BCR-ABL1 translocation showed complete response with TKI treatment. The current study describes a rare case with 46: XX; t (9; 15; 22) (q34; p11; q11) along with CML-CP also showed a complete hematological response to imatinib mesylate.

Audience Take Away Notes

- Even after having different complex translocations, CML patients respond to the same and effective Tyrosine Kinase Inhibitor (TKI) treatment. As a result, the patients have a complete hematological response
- This research will simplify the clinician's job and eliminate the quandary of whether to change the treatment or not, and they will be much more certain about it. Furthermore, it will improve treatment accuracy
- This study also alerts and encourages researchers to confirm each result using more than one method (As we have done to confirm translocation we have used cytogenetics, FISH, and qPCR)

Biography

Diwakar Sharma is CSIR-NET (2018) qualified J.R.F. working under the supervision of Dr. Surender K. Sharawat, Scientist, Department of Medical Oncology, and Dr.B.R.A.I.R.C.H. A.I.I.M.S., New Delhi. He is pursuing his Ph.D. (Batch 2019) from Department of Biotechnology, Jamia Millia Islamia. He earned his bachelor's and master's degrees in biochemistry Hons. at Delhi University and Jamia Hamdard, respectively. He is a keen observer and an enthusiastic participant. He is also a lifetime member of the Indian Association of Cancer Research since 2020.

Ritu Sharma*, Sukhraj Kaur
Department of Biochemistry, Government Medical College, Amritsar-143001, Punjab, India

A study of hypercoagulable and inflammatory markers in COVID-19 patients

A procoagulant state and dysfunctional immune response prevails in SARS-Cov2 infection. The goal of the present study was to explore the trend of potential parameters such as D-Dimer, IL-6, C-reactive protein and Pro-calcitonin (PCT) in COVID-19 patients. The study was conducted in a period of 2020- 21 when the knowledge was still growing pertaining to this virus. A total of 500 cases were enrolled who were either admitted or visiting Outdoor clinics. 95% of the patients had significantly raised D-Dimer levels (>1.0ug/ml), some showing levels up to 40ug/ml. D-Dimer being a fibrinogen degradation product indicates a hyper coagulation state in these patients. Besides, a significant surge in IL-6 levels was observed. Out of 500, 488 patients showed IL-6 levels more than 7pg/ml. This increase was associated with increased inflammation, as C-reactive protein levels were more than 6mg/ml in majority of these patients. An interesting finding was the elevation in PCT levels. The relevant increase was especially observed in ICU cases and those admitted in wards. These patients had significantly raised PCT levels (>0.05ng/ml) as compared to those who were only visiting outdoors and were advised home isolation depending upon their clinical condition. High PCT levels indicate the bacterial infection in a due course due to inflammation giving way to normal bacteria to invade lung tissue. PCT levels would be helpful in identifying severe cases and their treatment accordingly. Because of the heavy rush of COVID-19 patients, a follow up study could not be done. However repeated estimations (as suggested by the clinician) of D-Dimer, IL-6, C-reactive protein and PCT in ICU patients and those admitted in ward showed that levels correlated well with their clinical condition. The trend was quiet clear in COVID-19 patients as none of these cases showed levels close to normal reference levels. Hence, it may be concluded COVID-19 infection is certainly associated with hypercoagulable inflammatory state along with immune dysregulation and these parameters have huge potential to frame a treatment strategy and prognosis especially in hospitalized critically ill patients.

Audience Take Away Notes

- The knowledge regarding the pathogenic mechanisms of SARS Cov-2 is still growing. However, it is quite clear now that the above mentioned markers clearly showed a significant increase in COVID-19 patients which would be helpful in framing treatment strategies
- Estimation of PCT could identify the severe cases from the mild one. SARS Cov-2 infection increases the risk of thrombosis; hence it would be interesting to see if some protein kinases can also get activated in platelets mitigating the hyper coagulation state

Biography

Dr. Ritu Sharma studied Master's Biochemistry at Government Medical College, Amritsar, India in 2002. She then joined the research group of Prof. Balwant Singh at Guru Nanak Dev University, Amritsar, India as fellow of Indian Council of Medical Research for her Ph.D. program. She received her PhD degree in 2007 in Molecular Biology and Biochemistry. After one year postdoctoral fellowship supervised by Prof. Ulhas Naik at University of Delaware, USA, she obtained the position of Assistant Professor Biochemistry (current position) at Government Medical College, Amritsar, India. She has published 23 research articles in journals of repute with 3 Best Paper Awards to her credit.

Francis Ajeneye
Princess Alexandra Hospital NHS Trust Hamstel road, Harlow CM20 1QX
United Kingdom

Trauma management in transfusion medicine

ATrauma remains a leading cause of death in all ages. Hemorrhagic shock accounts for 80% of deaths in the operating theatre and up to 50% of deaths in the first 24 h after injury. Exsanguination is an important cause of mortality for trauma patients, and the successful management of severely injured patients is a team effort.

This oral presentation is intended to provide a better understanding of the priorities in specific situations. Blood Transfusion support and communication in acute trauma can be challenging and demanding on the resources of the blood transfusion services and staffing. The need for large volumes of blood components for some patients cannot be underestimated, particularly those with the greatest risk of mortality. The possibility of death can arise before or within minutes of their arrival to the hospital. Hospitals must have a major haemorrhage protocol in place and this should include clinical, laboratory and logistic responses. Protocols should be adapted to specific clinical areas with planned simulations to test the effectiveness of the major haemorrhage protocol. Fibrinolysis can occur in an accelerated fashion, destabilizing effective coagulation in many clinical situations associated with massive haemorrhage. Patient management should be guided by laboratory results, near- patient testing, but led by the clinical scenario. Effective teamwork and communication remains an essential part of this process.

Audience Take Away Notes

- Recent advances in blood Transfusion medicine during Trauma
- Effective use of blood and its products
- A better understanding of transfusion protocols during massive haemorrhage
- Lessons learnt from effective communication

Biography

Dr. Francis Ajeneye is a Chartered Scientist, member of the British Blood Transfusion Society, a Fellow of Institute of Biomedical Sciences and a Certified American Medical Technologist. His research interest has generated publications, including refereed journal articles, posters in professional journal and conference proceedings nationally and internationally. He is an active speaker at international meetings with areas of interest around - Traceability compliance models, tracking systems in blood transfusion, haemovigilance, alternatives to Blood Transfusion, safety barriers and error management in the blood transfusion. He continues to promote the appropriate use of blood and its products, an advocate for Quality Management Systems and Evidence-Based Research in Transfusion Medicine.

Dr Ajeneye continues to build and maintain scientific knowledge on blood products and therapeutics by providing scientific and technical support for professional bodies, maintain credible, professional relationship, support teaching of Biomedical Science in the United Kingdom University and a reviewer for international journals.

Aristotle G. Koutsiaris[1*], Konstantina Riri[2], Stylianos Boutlas[3], Thomas N. Panagiotou[2], Maria Kotoula[2], Zoe Daniil[3] and Evangelia E. Tsironi[2]

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COVID-19 microthrombosis in vivo assessed by conjunctival video capillaroscopy

Currently, more than 6.8 million deaths have been reported globally [WHO] from the COVID-19 pandemic and numerous symptoms have been observed in patients surviving COVID-19 which were described by the term "long COVID syndrome". The injured endothelium has a primary role in the progress of the COVID-19 disease and as one of the three components of Virchow's triad, it is the cause of extending thrombotic microangiopathy. Various microthrombotic mechanisms have been proposed, such as degradation of endothelial junctional proteins and glycocalyx, endothelial cell derived microvesicles, endothelial exocytosis, and immunothrombosis with NETs. Regardless of the endothelial mechanism, COVID-19 leads to altered microvascular hemodynamics and extensive microthrombosis and that was the reason clinical doctors proposed antithrombotic strategies.

The purpose of recent work was to quantify the hemodynamic and thrombotic effect of COVID-19 on the eye microcirculation of patients with thromboprophylaxis, shortly after hospital discharge. Microvessels were identified and classified as "capillaries" (CAP), "postcapillary venules of size 1" (PC1), and "postcapillary venules of size 2" (PC2). The results demonstrated that COVID-19 not only reduces significantly axial blood velocity in the exchange microvessels of the eye but has also a devastating effect on microthrombosis despite thromboprophylaxis treatment. This gives a possible explanation for long COVID syndrome and a hint about the existence of a possibly unknown coagulation factor.

The antithrombotic strategy for COVID-19 disease patients is still a matter of debate and this presentation will discuss the latest COVID-19 related microthrombotic and microfluidic in vivo data, mainly from imaging techniques.

Audience Take Away Notes

- The audience will be informed on in vivo imaging quantification techniques of microvascular hemodynamics and thrombosis
- The audience will learn the latest research results on COVID-19 in vivo microthrombosis quantification
- There will be some discussion on thromboprophylaxis and related mechanisms
- There will be an appreciation that this is multidisciplinary research involving hemorheology, bio-optics, imaging, blood coagulation, and medication

Biography

Dr. Aristotle G. Koutsiaris studied Electrical and Computer Engineering at the Aristotle University of Thessaloniki (Greece) and Biomedical Engineering at Dundee University (United Kingdom). He then joined the research group of Prof. Sokrates Tsangaris at the Biofluid Mechanics Laboratory of NTUA (Athens) and received his Ph.D. degree in 2000. His doctoral & postdoctoral work was on the application of optical imaging techniques on microvessels in-vitro and in-vivo, and since then he has worked and taught at several academic institutions with a good international scientific impact. He is currently an Assistant Professor in the Faculty of Medicine, University of Thessaly.

Milos Bohonek
Military University Hospital Prague, Czech Republic

Clinical use of cryopreserved platelets: The Czech Republic concept

Background: The short shelf-life of fresh platelets (PLTs) limits their efficient inventory management and availability during a massive transfusion protocol. Risk of insufficient availability can be mitigated by building an inventory of cryopreserved platelets.

Method: Platelets are frozen with 6 % DMSO at −80°C, before freezing PLTs are concentrating and removing the supernatant. Shelf life of frozen PLTs is 2 years. Before use thawed PLTs are reconstituted in thawed plasma type AB and must be transfused up to 6 hours. Frozen PLTs are in Czech Republic produced since 2014 and currently are used in 7 university hospitals, usually as part of a massive transfusion protocol for polytraumatic patients but also for other indications and their stockpile is part of the state crisis blood policy.

Conclusion: Frozen PLTs are a beneficial for civilian as well as military blood banks and all facilities which do not have a permanent or sufficient stock of fresh platelets available. Due to a relatively easy preparation, the cost of frozen platelets is not high and their storing in small portable deep freezers does not bring any significant additional expenses. Frozen platelets are safe and effective and procedure of thawing and reconstitution of frozen platelets is very simple and fast, and it allows for having quality platelets products when dealing with massive bleedings and other urgent situations.

Audience Take Away Notes

- Explain the process and methods of platelets cryopreservation, their storage and reconstruction before use
- Give an overview of the use of cryopreserved platelets in the world and their clinical use and significance
- To acquaint with the production and use of cryopreserved platelets in the Czech Republic

Biography

Colonel Dr.Bohonek is the Head of Clinical Laboratories and Head of Department of Hematology and Blood Transfusion Military University Hospital Prague, Czech Republic and the senior consultant for Hematology and Blood Transfusion, Military Medical Service of Army of the Czech Republic. He has published in the Czech Republic as well as in international journals on many topics concerning blood transfusion medicine, and has had numerous talks and posters at various congresses. His main scientific interest lies in cryopreservation of blood and in issues associated with military blood transfusion service and clinical transfusion medicine and in the field of hemostatic resuscitation during massive bleeding and implementation of whole blood transfusion in both civilian and military settings. In 2008, he finished the doctoral study with a research paper titled “Cryopreservation of Red Blood Cells – the Development and Establishment of New Methods,” and received Ph.D. He is the guarantor in the field of hematology and blood transfusion and the university lecturer at The Faculty of Biomedical Engineering Czech Technical University Prague. He is president of Society of Military Medicine and former president of Society for Blood Transfusion of The Czech Medical Society, member of International Society of Blood Transfusion, member of AABB and member of the expert team Blood Panel of COMEDS NATO.

Jean Mercier Ythier
Professor University of Paris-Pantheon-Assas France

The contested market of plasma

Voluntary, anonymous free gift-giving has become nowadays the dominant norm for blood donation for transfusion purposes, in view of its established ability to satisfy the needs in labile blood products in satisfactory conditions of safety and cost. But the economy of blood products is also the place of one of the main exceptions to the principle of non-commercialization of body parts. We show that there exists a genuine international plasma market, which provides the raw materials for the production of blood protein products by pharmaceutical industries. The recent years have seen a considerable strengthening of the massive and globalized features of this market. We briefly describe the issues that this evolution raises, and we sketch some directions for a partial resolution of them. We notably explain why the development of contract fractionation appears both possible and desirable from an economic perspective in the present context.

Biography

Jean Mercier Ythier is professor of economics at the University of Paris-Panthéon-Assas, France. He graduated from the Institute of Political Studies of Paris (PhD, 1989). He was also a graduate student at Harvard University (1986-87). He went notably through positions of invited research fellow at the University of Montréal (Québec, Canada), assistant professor and associate professor of economics at the University of Paris Panthéon-Sorbonne and professor of economics at the University of Lorraine (France). Prof. Jean Mercier Ythier's research interests include the theory of general competitive equilibrium, microeconomic theory, public economic theory, economic philosophy, altruism, ethics, and topics of economic anthropology.

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Can a prolonged APTT predict a positive lupus anticoagulant in a patient with thrombosis?

Background: Anti Phospholipid Syndrome (APLS) is a hypercoagulable state characterized by thrombotic events (venous or arterial) or obstetric complications along with persistent positivity of antiphospholipid antibodies (lupus anticoagulant, anticardiolipin, or □2-glycoprotein I antibodies). The diagnosis of antiphospholipid syndrome can be challenging to make, as it requires positive antiphospholipid antibodies on two tests, taken at least 12 weeks apart. Antiphospholipid antibodies can interact with the phospholipids used in coagulation tests such as the APTT, resulting in prolonged clotting times. Although this relationship between lupus anticoagulant and APTT is well known, there is a lack of studies quantifying this relationship. The aim of our study was to determine if there is a significant association between APTT and lupus anticoagulant and to determine if a prolonged APTT predicts a positive lupus anticoagulant.

Methods: Retrospective cohort study of patients who presented with thrombosis and were tested for both an APTT and antiphospholipid antibodies between January 1st, 2015 and April 1st 2021, who received care at the Lifespan Health System.

Results: Of the 116 patients included in this study who presented with both thrombosis and were tested for both APTT and lupus anticoagulant, 40 patients (34%) ended up being diagnosed with APLS. The baseline characteristics of the patients, separated based on a diagnosis of APLS, are included in Table 1.

Specificity of prolonged APTT for a positive lupus anticoagulant was found to be 96.77% and the sensitivity was found to be at 10.59%. Coefficient of association was calculated to see if there was a significant association between the values of APTT and the lupus anticoagulant (coefficient 0.08, 95% CI -0.05 to 0.216, p = 0.240). There was no significant association between the APTT and lupus anticoagulant.

A logistic regression was performed to see if a prolonged APTT of greater than 37 seconds predicted a positive lupus anticoagulant (OR 3.55, 95% CI 0.431 to 29.267, p = 0.239). A prolonged APTT was not found to predict a positive lupus anticoagulant.

Conclusions: In our study, we saw a low sensitivity of 10.59% of a prolonged APTT for a positive lupus anticoagulant. We found that there is not a significant association between a prolonged APTT and a positive lupus anticoagulant in patients with acute thrombosis. A prolonged APTT is not a good screening tool for APLS, and antiphospholipid antibodies should be obtained regardless of the value of the APTT, whenever APLS is suspected. Limitations of our study include that it was a single center study with a small sample size, which may not have allowed for statistically significant findings.

Variable	Without APLS (n= 76)	APLS (n = 40)
Age, median years(IQR*)	52 (40.5-62.5)	52.5 (39.5-57.5)
Sex		
Male, number(%)	37 (49)	22 (55)
Female, number(%)	39 (51)	18 (45)
Lupus anticoagulant, median (IQR)	1.265 (1.015-1.33)	1.355 (1.255-1.645)
aPTT, median seconds (IQR)	29 (26-31.5)	30 (27-34.9)
History of lupus		
Yes, number(%)	4 (5)	4 (10)
No, number(%)	72 (95)	36 (90)
History of DIC		
Yes, number(%)	7 (10)	8 (20)
No, number(%)	69 (90)	32 (80)

Table 1. Baseline characteristics of the Patients, separated by diagnosis of APLS
*IQR- interquartile range

Audience Take Away Notes

- To assess the association between a prolonged PTT and a positive lupus anticoagulant
- To improve clinical practices regarding screening for APLS
- To allow for more patients to be tested for APLS and initiated on appropriate therapies

Biography

Dr. Sanka is a second year internal medicine resident at Brown University in Providence, Rhode Island. She studied Biology and Computer Science at the University of North Carolina at Chapel Hill, and graduated with her Bachelor of Science in 2017. She then went on to earn her Doctor of Medicine at University of North Carolina at Chapel Hill in 2021.

Salma A. Ghanem[1], Nisha Pindoria[2], Khalid A. Ghanem[3], Ahmed N. Ghanem[4*]

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Volume Kinetic (VK) shocks or Volumetric Overload Shocks (VOS) in clinical practice

Volume Kinetic (VK) shocks are cardiovascular shocks induced by acute substantial volume changes of the cardiovascular system in either direction by decrease or increase. A decrease in cardiovascular volume induces the long established and well-known hypovolemic and haemorrhagic shocks. Cardiovascular shocks induced by Volumetric Overload (VO) have been recently reported. Volume Kinetic (VK) shocks or Volumetric Overload Shocks (VOS) are common iatrogenic complication of fluid therapy in hospitals that is overlooked and underestimated. It may present in theatre as cardiopulmonary arrest or later with coma and Acute Respiratory Distress Syndrome (ARDS). VOS is 2 types: VOS1 and VOS2. VOS1 is induced by 3.5-5 L of sodium-free fluid and is characterized with dilution HN that has 2 nadirs and 2 paradoxes, is most dynamic and illusive and currently has a lifesaving therapy of 5% NaCl or 8.4% NaCo3. VOS2 may complicate VOS1 or occur de novo complicating sodium-based fluid therapy during resuscitation of shock, acutely ill patients, and prolonged surgery. It has no obvious serological markers or none. Between 3-10 L of sodium-based fluids induce VOS 2, and 12-14 L cause mortality. Many errors and misconceptions mislead physicians into giving too much fluid for resuscitation due to faulty rules on fluid therapy dictated by the wrong Starling's law. The correct replacement for this law is the hydrodynamic of the porous orifice (G) tube. These scientific discoveries should make the Medical World wake up and pay attention.

Keywords: Hypernatremia, Shock, the transurethral prostatectomy syndrome, The Adult respiratory distress syndrome, Starling's law, Capillary hydrodynamics.

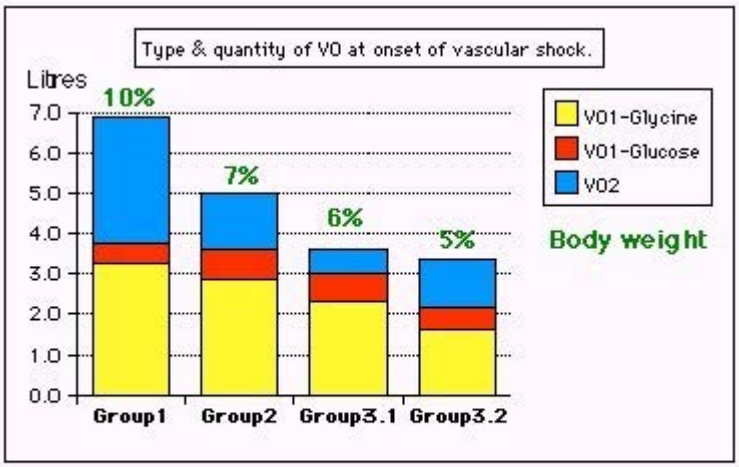

Figure shows Volumetric Overload (VO) quantity (in litres and as percent of body weight) and types of fluids. Group 1 was the 3 early patients who died in the case series as they were misdiagnosed as one of the previously known shocks and treated with further volume expansion. Group 2 were 10 patients from the series who were correctly diagnosed as volumetric overload shock and treated with Hypertonic Sodium Therapy (HST). Group 3 were 10 patients who were seen in the prospective study and subdivided into 2 groups; Group 3.1 of 5 patients treated with HST and Group 3.2 of 5 patients who were treated with guarded volume expansion using isotonic saline.

Biography

Dr. Ahmed Nasr Ghanem was educated in Egypt and qualified in 1974, Faculty of Medicine, Mansoura University, Egypt. He spent his internship at Mansoura University Hospitals. He gained all postgraduate experience in United Kingdom, where he was promoted in posts up to the consultant level. He practiced as consultant Urologist in UK, Saudi Arabia, and Egypt. During his career life he attended many conferences and won the award of Princes Alexandra Memorial Award and reported over 100 articles of which he made 15 important discoveries in medicine, physiology, urology, nephrology, cardiovascular and surgery. He discovered two new types of vascular shocks, proved that one physiological law is wrong and provided the replacement of G tube hydrodynamic. He resolved the puzzles of 3 clinical syndromes: the Transurethral Resection of the prostate (TUR) syndrome, the Loin Pain Haematuria Syndrome (LPHS) and the Adult Respiratory Distress Syndrome (ARDS). Now he is happily retired in Egypt dedicating his time to writing scientific medical articles and peer reviewing and he is an editorial board member for many Journals. He was the Editor in Chief for Surgical Medicine Open Access Journal (SMOAJ). He authored 8 books and published 6.

Emmanuel Ikubese[1], Eddie Resphanto[2], Eunice Owino[3*], Ruth Wekesa[4]

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[2]Sickle Cell Disease Africa, Nigeria
[3]Sickle Cell Uhuru Trust, Kenya
[4]Sickle Cell Uhuru Trust, Norway

MZIGO Project

Sickle Cell Disease is one of the world's most common genetic diseases, affecting an increasing number of people but is still relatively unknown to the wider public. It poses a significant public health problem notably in sub-Saharan Africa. The greatest burden of SCD is in sub-Saharan Africa, where access to medical care and public health strategies to decrease mortality and morbidity are not uniformly. The MZIGO Project will present solutions to address the area of creating proper awareness while also highlighting the importance of media advocacy to further disseminate information regarding latest scientific developments and best practice to the public. The scope of the MZIGO Project being a fully fledged media advocacy campaign would feature various media campaign activities on sickle cell disease and also present a dedicated TV series to help tackle the challenges faced by sickle cell disease, as in a replica case of the successful use of media advocacy through the MTV Shuga TV series that took the success of scientific research and made it available to the main stream media globally through the MTV Shuga campaigns that drastically reduced the stigmatization of people living with HIV and AIDS.

Audience Take Away Notes

- Highlights on the importance of media in carrying out advocacy
- The audience will game more insight on positive effect of the media in communicating scientific developments and strengthening the overall advocacy efforts
- This research that other faculty could use to expand their research or teaching
- MZIGO Project provides active practical solution that could simply the mode of communicating latest developments on prevention and control of sickle cell disease and also appeal to the public in terms of correcting negative.

Biography

Emmanuel Ikubese is an award winning Filmmaker/Actor and Media consultant. He is also the Founder and CEO of EI8 Media Limited, a media company based in Lagos Nigeria with the aim of telling Pan African stories that creates global Impact. As an Actor Emmanuel has featured in several movies and tv series including Mtv Shuga, My Flatmates, SImple Lie, Fifty, etc. He has also created and directed several films and tv series including Mzigo and a pan african series shot in Uganda titled Kyaddala. Emmanuel is a writer and author of several books and films currently in development.

Erin Weigel
Kedrion Biopharma, Fort Lee, NJ, USA

Diagnosis and treatment for plasminogen deficiency type 1 (plgd-1): An ultra-rare hematologic disorder

Plasminogen deficiency (PLGD) is an ultra-rare disorder, which is a subset of rare diseases that affect less than 1,000 individuals in a country. PLGD is classified as hypoplasminogenemia (PLGD-1) or dysplasminogenemia (PLGD-2). PLGD-2 is typically an asymptomatic qualitative disorder resulting from abnormal plasminogen (PLG) activity with a normal PLG antigen. PLGD-1 is a systemic disorder characterized by development of fibrin-rich ligneous lesions on mucus membranes. The estimated prevalence of PLGD-1 is approximately 1.6 per million individuals with approximately 500 symptomatic individuals in the US and 12,000 worldwide. Research shows it takes an average of 7.3 physicians and 4.8 years for a patient to be diagnosed with a rare disease. The rarity of PLGD can make diagnosis challenging due to lack of knowledge and awareness of the disease.

PLGD-1 is an autosomal recessive disorder caused by a homozygous or compound heterozygous mutation on chromosome 6. This results in a deficiency of PLG antigen and PLG activity which causes ligneous, "wood-like", lesions on mucus membranes throughout the body. The most common manifestations are Ligneous Conjunctivitis (LC) with an 81% prevalence and ligneous gingivitis (30%). Local infections or injury can trigger lesions to develop, but lesions may also develop spontaneously. Depending on the site, lesions can cause life-threatening conditions, including renal and respiratory failure. Diagnosis for PLGD-1 is confirmed with a PLG antigen and PLG activity level that are both decreased (normal PLG antigen is 6-25 mg/dL and PLG activity is 70-130%).

Treatment options have been limited until the FDA approval of the first plasma-derived human plasminogen, in 2021. This treatment temporarily replaces the missing PLG restoring fibrinolysis.

Audience Take Away Notes

- The purpose of this content is to provide education/clinical practice awareness. Due to the ligneous lesions occurring throughout the body, patients may present to a variety of specialties
- The audience will understand and identify the signs and symptoms of PLGD-1, the laboratory tests used to diagnose, and available treatment
- Update providers on the recent FDA approval of an orphan treatment for PLGD-1

Biography

Mrs. Weigel studied nursing at the University of Cincinnati in Cincinnati, OH and graduated with her BSN in 2010. She began her career at Cincinnati Children's Hospital Medical Center (CCHMC) in the Pediatric Intensive Care Unit (PICU) in Cincinnati, OH. After three years in the PICU, she transitioned to the Hemophilia Treatment Center and completed her MSN at Walden University in 2016. Erin became a Senior Clinical Specialist in a global biopharma company in 2015 and recently joined Kedrion Biopharma as the hematology MSL for the US.

Hamzullah khan[1*], Shahtaj khan[2]

[1]Professor of Hematology, Nowshera Medical College, Nowshera/PGR HMC, Peshawar

[2]Professor of Hematology, MTI Hayatabad Medical Complex, Peshawar

Peripheral hematological predictors of morphological remission/ hemophilic recovery in plasma cell disorders after induction chemotherapy

Objectives: To determine the predictive values of peripheral hematological markers for remission in cases of Plasma cell disorders/Multiple myeloma after induction therapy.

Material and methods: This prospective study was conducted in the department of Hematology, MTI Hayatabad Medical Complex, and Peshawar. All cases of Plasma cell disorders referred to department for remission after taking induction therapy, irrespective of age and gender were included. Relevant information's were collected on a predesigned proforma prepared in accordance with the objectives of the study.

Result: A total of 36 cases referred for remission of plasma cell disorders were included, with 21(58.33%) were males and 15 (41.66%) females. The mean with standard deviation of numerical variables were; Age (56+ 8 years), Hb% (11+ 2.3 g/dl), Reticulocyte count (0.9+ 0.5%) and plasma cells in the remission cases as 16+ 2.76%. Median of the TLC and Platelets in remission cases were 6275/cmm^3 and 198000/cmm^3 respectively. There was a significant association of remission with male gender (p=0.05) while no such association was seen in age groups (p=0.57). We observed a statistically significant an inverse correlation of remission (plasma cell in the bone marrow aspirations) with an increase in Hb% and retic count (r_s = -0.451, p = 0.006) and (r_s = -0.397, p = 0.053) respectively. A similar inverse correlation was seen between remission (plasma cell percentage) with TLC and platelet count that was not statistically significant (p >0.05). Hb% and Reticulocyte count showed a higher clinical sensitivity for remission with an Area under Curve (AUC) of 0.733 and 0.736 on Receiver Operating Curve (ROC).

Conclusion: In cases of Plasma cell disorders with post-induction therapy, the peripheral blood values for an increased in Retic and Hb% predict the remission with 95% confidence. Remission favors male gender more as compared to female gender in all age categories.

Biography

Dr. Hamzullah khan is currently working as Professor of Hematology, Head Department of Pathology& Director Research & Development Nowshera Medical College, MTI Nowshera lo. He has special interest in Research in Public Health, Hematology and infectious diseases. He has published more than fifty (80) Research articles in different national and international indexed journals. He has presented his research on various national and international forums.

He is also the in charge of the Blood bank and transfusion medicine. He has published more than a dozen research papers in current pandemic covering the prevalence, incidence, gender and age impact, morbidity, mortality of COVID-19.

Evelyn Harlow Mwesigwa

[1]Department of laboratory ministry of health- Kampala Uganda, Uganda national laboratory and diagnostic services

The burden of sickle cell in Uganda

In Uganda, a plethora of a health priorities heavily weighted by infectious/communicable diseases which take precedence in resource allocation have left non-communicable diseases such as sickle cell anaemia largely under-studied. The sickle cell trait burden in the country was reported at 13% nearly 7 years ago [1] and continues to grow in an environment where geographical differences in burden have been observed. Progressively however, interest in addressing this congenital non-infectious, silent killer of children has been realized through advocacy and political will at the Ministry of Health. Several support programs including new born screening targeting children at birth and those below 2-years of age have been rolled out. Sickle cell clinics have been established in high burden districts with health workers' training on disease manifestation and management. Resources have been invested in raising awareness and sensitization including pre-marital screening and encouraging youth engagement. Several partnerships have been established in collaboration with the national health laboratory to establish the reach of sickle cell anaemia and curtail the spread of the trait.

Efforts to address the disease notwithstanding, several challenges in the management of the sickle cell anaemia and living with the disease heavily weigh on sufferers, parents and caretakers. This presentation will shed light on the intricacies on raising a child with sickle cell disease, the impact on the family, marriage, finances and social aspects. How these experiences have been used to serve the community, the establishment and growth of a patient/community focused organisation, using social media platforms to create support for families. This talk will also delve into the toll of sickle cell disease on the body, failure to respond to conventional therapies such as hydroxyurea, the choice of embarking on alternatives such as bone marrow transplant and experience as a donor of the stem cells, the impact of the procedure, challenges of the half match transplant and recovery.

Research in sickle cell anaemia and clinical preparedness for new technologies and cutting edge treatments like gene therapy are also underway in partnership with several stakeholders.

Audience Take Away Notes

- The audience will learn about efforts to contain sickle cell anemia in low income countries like Uganda, efforts invested in in sickle cell research and management
- Outputs from Partner and Government engagement in the sickle cell campaign
- The audience will appreciate Uganda's efforts on the New Born Screening program and opportunities for collaboration driven by as availability of a sample bio-bank at the national repository
- Depending on interest, more will be shared about the sickle cell disease which is the most lethal genetic disorder and they will learn more about it and its challenges and what can be done to support those living with sickle cell disease in both high income countries and low income countries
- Research/survey especially about the burden of sickle will be shared and yes, it can be used
- Yes, I believe so does this provide a practical solution to a problem that could simplify or make a designer's job more efficient

- Yes, I believe so Will it improve the accuracy of a design, or provide new information to assist in a design problem
- List all other benefits
- New collaborations and partnerships will be formed
- Many will pick interest in what Uganda is doing in the sickle cell field and would like to be part

Biography

Mwesigwa Evelyn is a patient/community advocate. A mother of a child born with sickle cell disease. I am a Program Officer for Sickle cell at the Uganda National Health Laboratory and Diagnostic Service- Ministry of Health Uganda. I am the founder of Sickle Cell Network Uganda, a patient support group. I am a member of the Global Gene Therapy Initiative.

Michiko N Fukuda
Sanford Buhnham Prebys Medical Discovery Institute, USA

Overcoming the blood–brain barrier by annexin A1-binding peptide to target brain tumors

Annexin A1 is expressed specifically on the tumor vasculature surface. Intravenously injected IF7 peptide (IFLLWQR) targets tumor vasculature via annexin A1. We tested the hypothesis that IF7 overcomes the blood–brain barrier and that the intravenously injected IF7C (RR)-SN38 eradicates brain tumors in the mouse. To test this hypothesis, a dual-tumour model was generated by inoculating luciferaseexpressing melanoma B16 cell line, B16-Luc, into the brain and under the skin of syngeneic C57BL/6 mice. IF7C (RR)-SN38 was injected intravenously daily at 7.0 μmoles/kg and growth of tumors was assessed by chemiluminescence using an IVIS imager. A similar dual-tumour model was generated with the C6-Luc line in immunocompromised SCID mice, and IF7C (RR)-SN38 formulated with 10% Solutol HS15 was injected intravenously daily at 2.5 μmoles/kg into two brain tumour mouse models: B16-Luc cells in C57BL/6 mice, and C6-Luc cells in nude mice. The result was (1) Daily IF7C (RR)-SN38 injection suppressed tumour growth regardless of cell lines or mouse strains. Daily injection of Solutol-formulated IF7C (RR)-SN38 led into complete disappearance of B16-Luc brain tumour in C57BL/6 mice, whereas this did not occur in C6-Luc in nude mice. Therefore, the conclusion withdrawn was: IF7C (RR)-SN38 crosses the blood–brain barrier and suppresses growth of brain tumors in mouse models. Solutol HS15-formulated IF7C (RR)-SN38 may have promoted an antitumor immune response.

Biography

Michiko N. Fukuda is an Emeritus Professor at the Sanford-Burnham-Prebys Medical Discovery Institute in La Jolla, California. She has a Ph.D. in Biochemistry from the University of Tokyo. She founded IF7Cure Inc. and currently serves as its President. Fukuda has held various positions in academia, including as a Professor at Sanford-Burnham-Prebys Medical Discovery Institute and as a Fellow and Director at Glycomedicine Technology Research Center, National Institute of Advanced Industrial Science and Technology (AIST) in Japan. She was also an Adjunct Professor at Sanford-Burnham-Prebys Medical Discovery Institute.

Brandon Lucke Wold
University of Florida, USA

Curvularia and the brain: Case demonstration of optimal management

Background: Curvularia is a ubiquitous fungus found in tropical climates and has been reported to grow on marijuana leaves. Rarely, it can infect humans and propagate from the nasal sinuses into the brain.

Case: A 28-year-old immunocompetent patient presented with history of nasal polyps, headache, and subtle visual deficits on the right. Imaging revealed what appeared to be an invasive mass growing through the ethmoid and sphenoid sinuses into the anterior cranial fossa.

Results: Otolaryngology performed an endoscopic nasal biopsy with pathology and cultures consistent for Curvularia (figure 6). A combination case with neurosurgery and otolaryngology was planned. Surgeons used a bifrontal craniotomy and endonasal approach for gross total resection. Following resection, the patient was placed on 4 weeks of amphotericin treatment followed by 12 months of voriconazole based on recommendations by infectious disease. The patient has been stable since surgery.

Conclusion: Curvularia is a rare but potentially life threatening central nervous system infection that can be acquired from inhalational marijuana use. This illustrative case shows the importance of aggressive debridement followed by broad spectrum antifungal treatment to optimize outcome. With marijuana's increasing popularity, Curvalaria should be included on the differential diagnosis.

Biography

Brandon Lucke-Wold was born and raised in Colorado Springs, CO. He graduated magna cum laude with a BS in Neuroscience and distinction in honors from Baylor University. He completed his MD/PhD, Master's in Clinical and Translational Research, and the Global Health Track at West Virginia University School of Medicine. His research focus was on traumatic brain injury, neurosurgical simulation, and stroke. At West Virginia University, he also served as a health coach for the Diabetes Prevention and Management program in Morgantown and Charleston, WV, which significantly improved health outcomes for participants. In addition to his research and public health projects, he is a co-founder of the biotechnology company Wright-Wold Scientific, the pharmaceutical company CTE cure, and was a science advocate on Capitol Hill through the Washington Fellow's program.

He has also served as president of the WVU chapters for the American Association of Pharmaceutical Scientists, Neurosurgery Interest group, and Erlenmeyer Initiative Entrepreneur group. In addition, he has served as vice president for the graduate student neuroscience interest group, Nu Rho Psi Honor Society, and medical students for global health. He was an active member of the Gold Humanism Honor Society and Alpha Omega Alpha Honor Society. He is currently a member of the UF House Staff Council, Positive Culture Committee, Quality Improvement Committee, Board of Directors Alachua County Medical Society, and Accreditation Requirements Review Committee. He is married to Noelle Lucke-Wold and has two children. As a family, they enjoy running with their dogs, rock climbing, and traveling. In his spare time, Brandon frequently runs half marathons and 10ks together with his wife. Brandon also enjoys reading, playing piano, discussing philosophy, and playing chess. He is currently a Pgy5 neurosurgery resident at University of Florida with pursuing endovascular enfolded training and was awarded the Dempsey Cerebrovascular Research Fellowship.

Sanghoon Lee
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AI and machine learning technologies on immunotherapy

Cancers have long been investigated to be uncovered by differential microenvironmental conditions of malignant tumors for effective cancer diagnosis, prevention, and treatment. Recent advances in whole slide imaging technologies with ultra-high resolution have led to the accurate cancer detection and prognosis for precision treatment and functional monitoring. Up-to-date microscope slide scanners produce reliable and high-resolution images of tissue samples in a few-minute; however, cancer researchers are still required to provide laborious and time-consuming tasks on complex microscopy experiments for detecting different types of cells with interesting features. The tumor microenvironment is a complex biological environment including heterogeneous cellular components with various cell types such as tumor cells, stroma, blood vessels, and infiltrating inflammatory cells. Understanding the heterogeneous cellular components in the tumor microenvironment benefits developing therapeutic strategies thereby providing patients effective future strategies for cancer treatment. We present how the heterogeneous cellular components are spatially analyzed by using the state-of-arts deep learning technologies in the tumor microenvironment, demonstrating how to link the analyzed results to the patient prognosis, chemotherapy response, and immunotherapy. We have used Whole Slide Images (WSIs) of hematoxylin and eosin-stained Formalin-Fixed Paraffin-Embedded (FFPE) sections from different patient cohorts including some clinical data collected from South Korea and TCGA data freely available on GDC data portal. We preprocessed the datasets following traditional image processing methods and created prediction models using deep learning models. After then, we conducted spatial analysis by using a local statistic method to identify a statistically significant hot-spot region. In addition to the spatial analysis, we also present a hybrid interactive machine learning tool for cancer research. Since pathologists are still required to provide laborious and time-consuming tasks on complex microscopy experiments for identifying cancerous, it is critical to develop a fast, accurate, and reliable intelligent software tool for cancer researchers to detect cancer in the revolutionized whole slide images.

Audience Take Away Notes

- Using AI and machine learning technologies will not only significantly reduce the human effort for cancer detection but also provide more efficient and accurate spatial characteristics of complex prognostic biomarkers for cancer research
- This presentation will provide audience with advanced computational approaches and excellence synergistic with unique strengths of pathology imaging, computational microbiology, and computational immunology

Biography

Dr. Lee received his PhD degree in 2016 at the Georgia State University. After three years postdoctoral fellowship supervised by Dr. Cooper and Dr. Gutman in the department of biomedical informatics at the Emory University, he obtained a tenure-track position of an Assistant Professor at the Marshall University. He is a research collaborator working with Dr. Hwang at Mayo Clinic. He is a principal investigator of two NSF research awards: NSF ERI and NSF CRII. He leads machine learning and computational biology research at Marshall University.

Shaoying LI MD

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High grade B-cell lymphoma with MYC, BCL2 W/WO BCL6 rearrangements

High grade B-cell lymphoma with MYC and BCL2 with or without BCL6 rearrangements is also called double/triple hit lymphoma (DHL). MYC and BCL6 rearrangements, the previous MYC and BCL6 DHL have been excluded from this category in the 5th WHO classification. In the past few years, numerous case series of MYC/BCL2 DHL have been reported in the literature. Most cases of MYC/BCL2 DHL morphologically resemble diffuse large B-cell lymphoma (DLBCL) or high grade B-cell lymphoma, not otherwise specified (previous name in 2008 WHO: B cell lymphoma, unclassifiable, with features intermediate between DLBCL and Burkitt lymphoma). These tumors have a germinal center B-cell immunophenotype but an aggressive clinical course characterized by a high proliferation rate, advanced-stage disease, extranodal involvement, high International Prognostic Index score and high serum lactate dehydrogenase levels. All tumors have a complex karyotype. Despite a variety of therapeutic approaches that have been used to date, patients with DHL have a poor prognosis. Here we will discuss the clinicopathologic, immunophenotypic, cytogenetic, and prognostic features of DHL and some remaining issues.

Biography

Dr. Shaoying Li is an associate professor in the Department of Hematopathology at the University of Texas MD Anderson Cancer Center. She is board certified in Anatomic Pathology, Clinical Pathology, and Hematology. In addition to clinical responsibilities on Lymphoma, leukemia, and flow cytometry services, Dr. Li has been actively participating in multiple research projects in lymphoma and leukemia, which has led to over 150 research papers and multiple book chapters. Her major research interests include molecular cytogenetic risk stratification of DLBCL with a focus on “double hit” lymphoma and clinicopathologic and molecular study of mantle cell lymphoma.

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Using capillary whole blood to quantitatively measure ferritin: A validation trial of a point-of-care system

Iron deficiency is a public health problem with devastating health, developmental and behavioral effects, often exacerbated due to affordability and access to screening and diagnosis. Using IronScan™ a portable, point-of-care diagnostic system capable of quantitatively measuring ferritin in blood, we validate IronScan™ ferritin measurements using whole blood and serum with a lab-based, regulator-approved analytical device for measuring ferritin in venous serum. Capillary (finger stick) and venous whole blood samples were obtained from 44 male and female volunteers. Venous serum (VSER) ferritin concentrations were measured on Immulite 2000 (gold standard). Capillary whole blood (CWB), venous whole blood (VWB), and VSER ferritin levels were measured by IronScan™. CWB ferritin concentrations from IronScan™ were significantly correlated (R2=0.86) with VSER measured with the FDA-approved Immulite system. The results from the multiple regression analysis indicate 10% of the variability was due to the method of blood collection (venous vs capillary) and 6% was due to the form of blood analysis (whole blood vs serum). The sensitivity of diagnosing iron deficiency using the WHO cut off of <30 ng/mL is 90% with a specificity of 96%. In conclusion, IronScan™ is a rapid viable option for measuring ferritin as a point-of-care system.

Biography

Dr. Joanna Fiddler is an Assistant Professor in the Department of Food, Nutrition & Packaging Sciences at Clemson University. She earned her Bachelor of Science and Master of Science degrees in Nutritional Sciences and Health & Human Performance (exercise physiology concentration) before pursuing a PhD in Nutritional Sciences investigating iron metabolism at Oklahoma State University. She went on to study the role of B vitamin-gene interactions in mitochondrial de novo thymidylate biosynthesis and the effect of moderate iron deficiency on metabolic pathways that influence work capacity during her postdoctoral training at Cornell University in the labs of Dr. Martha Field and Professor Jere Haas. She joined the faculty at Clemson in 2023. Her work focuses on micronutrient nutrition and metabolism and studying their integration in health and disease.

Lucia Mundo[1,3]*, Ciara Leahy[3], Pradeep Ramagiri[2], Matthew Pugh[2], Eanna Fennell[3], Max Robinson[2], Wenbin Wei[2], Katerina Boucholova[2], Domenico Ferrara[3], Laura Bottoni[4], Federico Galvagni[4], Elena Pio[4], Anna Onnis[5], Sergio Tripodi[3], Andrew Bell[2], Lorenzo Leoncini[3], Stefano Lazzi[3], Paul G Murray[2], Katerina Vrzalikova[2]

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Deciphering the impact of bilf1, a new potential target therapy encoded by epstein-barr virus

Burkitt Lymphoma (BL), which arise from Germinal Centre B Cells (GCB), is an aggressive non Hodgkin B-cell lymphoma. The hallmark of nearly all BL tumours is the chromosomal translocation between the MYC gene and one of the Immune Globulins (Ig) heavy or light chain loci. In accord to the World Health Organization (WHO), BL can be classified into three forms which differ in geographic distribution, clinical presentation, and Epstein–Barr Virus (EBV) association: endemic (eBL), sporadic (sBL) and HIV-associated BL. The association with EBV is highly variable, with more than 90% of the endemic cases and near 30% of HIV-associated tumours linked to EBV. The sporadic form is rarely associated to EBV, with only 10-15% cases diagnosed as EBV-positive. The majority of BL tumours express a latency type I, characterized by the expression of only EBNA1, EBV-encoded BART miRNAs and the non-coding RNA-pol III non-translated RNAs termed EBV-encoded small RNAs (EBER)-1 and EBER-2EBER RNAs. However, other latent and lytic transcripts such BILF1 have been reported in a subset of BL cases. While it is well known that EBV has a significant impact on the BL pathogenesis, the function of these virus transcripts remains largely undefined. Here we have identified a novel role for the EBV-encoded BILF1, a constitutively active viral G-protein coupled receptor that is transforming in NIH3T3 cells and which can induce tumours in nude mice. High throughput Q-PCR assay and RNA in situ hybridisation revealed that BILF1 is expressed by most tumour cells of a subset of eBL. Furthermore, BILF1-expressing cells did not express the immediate-early EBV gene, BZLF1, indicating they are latently infected. Moreover, when expressed in primary human GC B cells, the progenitors of eBL, we found that BILF1 induced a transcriptional programme that recapitulated the aberrant transcriptional programme characteristic of primary eBL, including the up-regulation of known MYC and P13-K target genes. Our data indicate that BILF1 induces an oncogenic transcriptional programme that could be important for the pathogenesis of a subset of eBL.

Audience Take Away Notes

- Knowledge of a poorly known gene
- Raise new question about ebv
- New information for vaccine design

Biography

Mundo is a Marie Curie Fellow at the University of Limerick, Ireland, and Professor Adjunct in Molecular Pathology at the University of Nairobi, Kenya. His research is focused on novel insights into the pathogenesis of virus-associated malignancies for the development of new therapies. Mundo has contributed several important discoveries in the field: the first description of a non-canonical EBV-latency program in non-Hodgkin lymphomas (Abate et al. PLoS Pathogens, 2015); the first documented evidence of EBV in-situ in primary tumours classified as virus-negative (Mundo et al., Frontiers in Microbiology, 2017; Mundo et al, Modern Pathology, 2020; Infectious Agents and Cancer, 2022), the impact of BILF-1, a poorly studied gene with a great target therapy potential.

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SPEAKERS

INTERNATIONAL SUMMIT ON

HEMATOLOGY AND BLOOD DISORDERS

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Histologic transformation of mantle zone lymphoma to diffuse large b-cell lymphoma: A case report of disease relapses after COVID-19 infection

Introduction: Mantle cell lymphoma is a rare subtype of non-Hodgkin's lymphoma, which may develop into other subtypes, such as diffuse large B-cell lymphoma, which is the most common among all non-Hodgkin's lymphomas. Usual clinical features of diffuse large B-cell lymphoma include quickly growing, non-painful mass, enlarged lymph nodes in the neck, groin and/or abdomen, fever, night sweats, weight loss. Current data of COVID-19 infection risk and outcome in patients with non- Hodgkin's lymphoma, receiving chemotherapy and immunosuppression treatment, is variable and insufficient. We report a case of histologically confirmed transformation of mantle zone lymphoma to diffuse large B-cell lymphoma, the disease relapse after COVID-19 infection.

Case description: We present a 58-year-old female patient, who had a history of abdominal pain episodes associated with fever, diarrhea and nausea in 2017. Biopsy of colon revealed mantle cell lymphoma. Patient received polychemotherapy courses with Rituximab, Cyclophosphamide, Vincristine, high dose Cytarabine and Cisplatin. In the 2020 disease relapsed. Therapy with Rituximab and Bendamustine was continued. In 2021 disease relapsed again and lymphoma's transformation to diffuse large B-cell lymphoma was histologically confirmed. After the high dose chemotherapy (Rituximab, high dose Cytarabine and Cisplatin), autologous stem cell transplantation was performed. The Moderna vaccine against COVID-19 was received twice. Positron emission tomography showed complete metabolic remission. 6 months prior to case presentation diffuse large B-cell lymphoma has relapsed after COVID-19 infection, which was diagnosed in February 2022. The patient received Remdesivir antiviral therapy, followed by specific therapy courses with Rituximab, Bendamustine and Polatuzumab. COVID-19 infection returned in July 2022. Lymphoma dynamic was negative. Chemotherapy was changed to Vinblastine, Cyclophosphamide and Bleomycin – with a positive effect. Overall patient condition at present is dynamically positive.

Conclusions: In this report, we show a patient with diffuse large B-cell lymphoma setback after COVID-19 infection. Even after antiviral therapy COVID-19 patients with hematologic malignancies may have prolonged active infection with impaired viral excretion.

Keywords: Mantle cell lymphoma, diffuse large B-cell lymphoma, COVID-19, chemotherapy

Summary: Current study demonstrates a case of multiple lymphoma relapses with following chemotherapy courses, COVID-19 infection setbacks after vaccine due to intense immunosuppression.

Biography

I am 4th year medical student at Riga Stradins University, Latvia. I have been enthusiastic about hematology and oncology starting from second studying year at medical school, being myself diagnosed with rare hematological disease and receiving a stem cell transplant as a cure. I have also been into volunteering, working and researching in the field of hematology and oncology since finishing 2nd studying year at Medical Faculty. I have been into research in the fields of human anatomy, pediatric and adult oncology, in 2022 participated at Riga Stradins University International Medical Student Conference with two research papers about adolescent osteosarcoma clinical case, where was awarded with 1st place among all pediatric case reports and 2nd place among all surgery case reports. Currently I am doing research about mantle cell lymphoma transformation to diffuse large B-cell lymphoma and am going to participate with it in Riga Stradins University International Medical Student Conference 2023.

I would be glad to continue my contribution to hematology and oncology field improvement and development in Latvia, as well as abroad my country. It would be crucial to share my experience about oncology field development and treatment options in courtiers abroad, as well as improve my own education in the field of oncology.

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COVID-19 and erythrocyte groups

Introduction: ABO blood group antigens are related with pandemics of infectious diseases. The specific distribution of blood group antigens in the world is the result of the selectivity of Natural Selection. The several studies suggested also the possible link with Sars-COV 2 viral infection and Rh factor. O, Rh- blood group showed a fairly low rate of viral infection. Individuals with an Rh-positive blood group are more vulnerable to SARS-CoV-2 viral infection. The current study aims to find the possible relationship between ABO and Rh blood groups and the susceptibility of Sars-cov2 viral infection. The result were compared with ABO and Rh blood group phenotypes in healthy and post-infected individuals will give us an opportunity to identify viral infection sensitive and infection-resistant phenotypes, providing additional information in terms of risk group assessment and preventive measures.

Reaserch material and methods: A total of 447 blood samples have been studied. Among 333 blood samples belonged to the post-infected with SARS-Cov 2 virus and rest 114 blood samples were from healthy controls for the current research. The research material has been collected within fourth months (28.01.2021-30.04.2021) time period. Immuno-serological forward and reverse methods with anti-A, anti-B; anti-AB, anti-C, anti-c, anti-D, anti-E, and anti-e monoclonal antibodies have been used for ABO and Rh blood typing. One-variable □2 statistical analyses have been used for data processing, respectively.

Result: Eight combinations of ABO and Rh systems were studied in post-infected and control groups. Based on obtained results, above mentioned phenotypic combinations were also unequally distributed in post infected and control groups, except A (II), Rh+ phenotypic combination that occurred with the highest percentage in the group of post-infectious individuals. The prevalence equals to 41.4%, which is 11.6% higher than in the control group of the same phenotype (Figure 2). That, once again confirms the high susceptibility of A (II), Rh+ group to Sars-Cov 2 viral infection. In this particular case the □2 criteria is 33.69, which is 2.3 times more than CV (DF = 7), that is equal to 14.07. The chi-square criterion indicates the theoretically possible relationship between the two qualitative variables and the rejection of the null hypothesis (E = 0). The result is significant at p <.05An interesting picture has been revealed in the case of O, Rh+ and O, Rh- phenotypic combination. The prevalence of the O, Rh+ phenotype in the control group is 42.9% that is 9.9% higher than the prevalence rate of the same phenotype in the Sars-Cov 2 virus post-infectious group. O, Rh- phenotypic group is presented almost 1.4 times lower frequency in post-infectious individuals (control - 17.5%; post-infectious individuals - 11.1%).

Conclusion: O, Rh- phenotypic group is more resistance group to the infection, respectively.

Audience Take Away Notes

- Based on such studies, risk groups can be identified and preventive measures can be developed to prevent infection
- When a person knows that she or he is a carrier of a susceptible phenotype to an infection, she/he will vaccinate for prevention
- Research is also important from the point of view of population genetics

Biography

Marina Nagervadze – associated professor of Batumi State University, professor of Bau international university, Batumi. In the frames of 2006–2022 years, her sphere of interest was studying group antigens in different populations. She has studied peculiarities of spreading of given antigens during different infectious and non-infective diseases and their correlation peculiarities are established. There are distinguished stable phenotype groups that are steady and sensible towards disease and infecting. She is the author of over 50 scientific papers. She has about 20 years teaching experience on three level of educational system.

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Role of erythrocytapheresis in sickle cell anemia crisis management: A tertiary care centre experience from Chhattisgarh state of central India

Introduction: The current treatment of sickle Cell Disease includes hydroxyurea and RBC transfusions or exchange transfusions. RBC exchange is the replacement of a patient's RBC with donor RBC and can be performed either manually or automated. Automated RBC exchange is based on an apheresis procedure where RBC's are selectively removed and replaced with donor RBC with rapid reduction of sickled RBC's without increasing the hematocrit, fluid overload, and a reduced risk of iron accumulation. Costs, expertise & venous access are the main problems with automated RBC exchanges.

Aims:

- To Study the feasibility & efficacy of automated RBC exchange in the management of Sickle Cell crisis.
- To study the associated adverse events and patients compliance.

Materials and methods: This is a one year prospective observational study undertaken in our Centre at Raipur. The study population included Sickle Cell Disease (homozygous) patients who had been underwent automated red cell exchange procedures during vaso-occlusive crisis.

Results: A total of 22 sickle crisis patients underwent 30 automated red cell exchanges during the study period. The mean age of patient population was 17.6 years with three patients below six years of age. Central venous access was needed in five patients, remaining all procedures was done through peripheral veins. The mean Red cell volume exchanged was 1.22 times the total red cell volume of the patient. ABO/Rh and cross match compatible RBC units were exchanged, keeping the volume: volume ratio 1:1. The exchange process took, on average, 153 minutes. Seven patients experienced the adverse reactions with Chills/rigors was the most common adverse event noted. On two occasions the procedures were abandoned due to the venous excess problem.

Conclusion: Automated RBC exchange is very well feasible and is efficient therapeutic modalities to treat acute sickle crisis. The benefits of automated RBC exchanges are prevention of iron overload and viscosity related complications. It may be suggested to conduct prospective clinical trials in future to establish the feasibility & efficacy of automated RBC exchanges.

Audience Take Away Notes

- Feasibility & efficacy of automated RBC exchange in the management of Sickle Cell crisis
- Associated adverse events and patients compliance about erythrocytapheresis
- Erythrocytapheresis procedure

Biography

Dr. Neelesh Jain has done his MD in Transfusion Medicine & Immunohematology at the MUHS, Nasik University, and Pune, India in 2013. He then joined the Tata Medical Centre, Kolkata as fellow in the department of Bone marrow transplantation in 2017. After one year postdoctoral fellowship supervised by Dr Mammen Chandy at TMC Kolkata, he obtained the position of an Associate Consultant at the Apollo Gleneagles Hospital Kolkata and subsequently he obtained the full time Consultant position at the Balco Medical Centre, Raipur, and Chhattisgarh, India. He has published more than 20 research articles in various medical journals.

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Analysis and classification of diseases based on lifestyle with blood group prediction through fingerprint map reading using deep neural network

In the current digital world, hash may consider as a footprint or fingerprint of any digital term but from ancient era human fingerprint considered as the most trustworthy criteria for identification. The fingerprint of a human cannot be change with time even up to death of an individual. Due to the immense potential of fingerprints as an effective method of identification, it opens a lot of possibilities for human science research. This research investigates the problem of blood group identification through fingerprint. The fingerprint can be divided into basic four categories such as Loop, whorl, arch, and composites. Also, the ridge count and different angles in ridgeline are studied by many researchers in their research.

The first proposed method designed using fingerprint minutia feature vector, which prepared using FR core algorithm. It includes the Segmentation, Orientation, Ridge frequency estimation, Binarization, and then finally Thinning processes are applied sequentially; the NIST-4 fingerprint dataset is used to test the feature selection process. The proposed techniques produce better classification performance because there are 21 different minutiae features are extracted in the design of the Multilayer Deep Neural Network which is proposed for the prediction of the blood group of an individual with 90.31% accuracy and only 9.69% misclassification or rejection rate. The model 2 proposed an optimized CNN which is designed as an extension of an AlexNet that correlates the fingerprint patterns or different features of the fingerprint with the blood group of an individual. The design of proposed CNN used for the prediction of the blood group having noticeable performance with 95.27 % accuracy rate. The diseases based on individual lifestyle which are arises with aging like hypertension, type 2- diabetes and arthritis are analyzed and classified through fingerprint pattern, blood group, age, and different lifestyle habits of an individual. The initial investigation performed on Pima Indian diabetes and hypertension database downloaded from Kaggle. It is further validated using dataset prepared by survey which includes lifestyle eating habits, consumption of alcohol, smoke, exercise routine and work structure etc.

Audience Take Away Notes

- The human fingerprint used as digital hash from accent era, and due to its uniqueness as immense potential, fingerprints as an effective method of identification, it opens a lot of possibilities for human science research. This research investigates the problem of blood group identification through fingerprint. The fingerprint cannot only be limited to Loop, whorl, arch, and composites. Also, it has different ridge count and different angles in ridgeline are studied by many researchers in their research, which helps to identify fingerprints more efficiently. One of the main contributions of this work is to extract 21 different minutiae from fingerprint using fingerprint minutiae features extraction algorithm and prepared feature vector used to train the ANN which predict blood group of an individual. These algorithms have an accuracy of 90.31%
- The lifestyle disease is driven by seemingly unrelated causes such as rapid unplanned urbanization, globalization of unhealthy lifestyles and population ageing.Apparentcauses such as raised blood pressure, increased blood glucose, elevated blood lipids and obesity may be representations of deep lying lifestyle habits. In the current era due to busy schedule and unhealthily lifestyle such lifestyle disease arises at any stage of age in individual

- There are several risk factors that lead to the onset and development of such diseases. The various types of risks can be divided into three primary risk sets: modifiable behavioral risk factors, on-modifiable risk factors and metabolic risk factors, many of which are common for several diseases. Behavioral risk factors such as excessive use of alcohol, bad food habits, eating and smoking tobacco, physical inactivity, wrong body posture and disturbed biological clock increase the likelihood of lifestyle disease. The modern occupational setting (desk jobs) and the stress related to work is also being seen as potent risk factor for lifestyle disease. According to the WHO, more than 7 million people die each year due to the use of tobacco and the fatality rate is projected to increase markedly in the years to come. Excessive use of sodium in the diet causes 4.1 million deaths per year while alcohol intake leads to around 1.65 million deaths due to lifestyle disease. A simple lack of physical activity has been claiming 1.6 million lives annually. To analyze these issues, the proposed research designed a survey which includes age, fingerprint pattern, blood group, BMI index with lifestyle parameters like eating habits, consumption of alcohol, smoke, exercise routine and work structure etc. collect 1024 samples, which are further analyzed to study lifestyle diseases
- Furthermore, similar studies help to predict diseases at a young age of an individual. Analyzing and classifying communities according to age, blood group, fingerprint patterns, and lifestyle disorders can all be used to assist and prepare for future pandemics, such as COVID-19, in which mankind will be plagued by lifestyle-related diseases like type 2 diabetes and hypertension

The Relation between Diabetes, Hypertension and Rheumatoid Arthritis Patients and Fingerprint Pattern

- **Diabetes Patients**
  - Surge in arches in diabetes in both genders.
  - Growth in rate of recurrence of loops and arches and a lessened frequency of whorls especially in mid finger.
  - Reduced number of arches in the right hand of male and left hand of female having diabetics, it was more in diabetic males and females than in the controls.
  - Growth in radial loop, ulnar loop in both male and female diabetics.
  - Increase in frequency of whorls in both types of gender in diabetics.
- **Blood pressure/hypertension**
  - Higher prevalence of whorls and loops are associated with higher level of blood pressure.
  - Whorls and loops are prime ridge patterns in hypertensive patients.
  - ATD angle showed the mean of angle in patient surge rather than in control group.
  - Larger frequency of ridge endings in the thumbs and index fingers.
  - Amplified frequency in bifurcations and convergences in the middle, ring, and little fingers.
- **Blood pressure/hypertension**
  - Ulnar loop was the most prominent digital pattern in both genders.
  - Decrease in the radial loop in both male and female patients.
  - Loops were significantly decreased in the third finger of males and a first and fourth finger of females.
  - Decrease in the ulnar loops in both the hands of male and female patients.
  - Increase in the whorl pattern in the right hand of male patients and in both the hands of female patients.
  - Decrease in the arches of the left hand of female patients.

Biography

Dr. D. R. Ingle studied IS in Computer Engineering from Walchand College of Engineering Sangli, Maharashtra, Master of Engineering (M.Tech) from Dr Babasaheb Ambedkar Technological University, Lonere, India and Ph. D. in Computer Engineering from Sant Gadgebaba University, Amravati. Currently working as Professor and Head at Computer Engineering Department in Bharati Vidyapeeth College of Engineering Navi Mumbai. Specialization in Image Processing, Big data, Cloud computing and Machine Learning. He has published more than 50 research articles in various journals.

Mousa Qatawneh
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Bleeding in children with inherited factor deficiency: Our single centre experience in Jordan

Diagnosis and treatment of inherited bleeding disorders in children secondary to deficiency in single or multiple coagulation factors is of great importance and represent a challenging issue in developing country like Jordan. The prevalence of bleeding disorders varies in different countries and their ethnic groups, and still we have a shortage in documentation of these disorders related to diagnostic labs, variability of clinical presentation, family history of similar bleeding tendency with some denial and ignorance about the seriousness and importance of early detection to prevent major bleeding conditions. Inherited Factor Deficiency (IFD) refer to Bleeding disorders occur when one or more factor are missing or decreased from the blood, preventing the normal blood clotting formation. Inherited means that the person was born with the deficiency and will have it for the rest of his or her life. They may also pass it onto their offspring's. The result of 72 patients with inherited factor deficiency who were diagnosed and followed at Queen Rania AL-Abdullah children hospital in the Pediatric Hematology department in the period between 2015 and 2021, were retrospectively studied in regard to the frequency, diagnostic test, presentation and management plan. In these (72) patients, majority of patients 36 (50%) were hemophilia A, 5 (6.9%) were hemophilia B, 6 (8.4%) were von Will brand disease (vWD), and the remaining 25 (34.7%) were rare bleeding disorders. The median age of the patients at the time of diagnosis was 3.5 years. Seventeen patients (23.6%) present with major bleeding, 45 (62.5%) with minor bleeding and 10 patients (13.9%) were asymptomatic, 35 (48.6%) of them diagnosed by similar family history, 39 (54.2%) are from consanguineous parents, and 23 (31.9%) incidentally found in the preoperative laboratory studies.55 (76.4%) of patients are males and 17(23.6%) of them are females. Treatment principles for bleeding or pre-operative preparation in these clotting factor deficiency are based on what is deficient and replacement of it to achieve the hemostatic level required to form clot and maintain it stable, we have either specific factor concentrate like factor VIII in hemophilia A, Prothrombin>Complex>Concentrate (PCC) or Fresh Frozen Plasma (FFP) and cryoprecipitate (CRYO). Patients with hemophilia A or B, factor 7 deficiency given the factor concentrate, patients with factor X deficiency and vitamin k dependent factor deficiency given the PCC complex, patients with VWD we will have the factor concentrate in our department soon in the coming period, and finally the remaining rare factor deficiency like factor XIII, factor V and fibrinogen we use FFP or CRYO. In this study, we are going to present the prevalence, diagnostic approach, follow-up, treatment modality of various bleeding history, preoperative preparation and the challenges we face.

Conclusion: The variety in clinical presentation of IFD lead to significant diagnostic and therapeutic Challenges, sharing our experience in treating patients with inherited factor deficiency will help to improve diagnosis and management of these bleeding disorders especially in countries with limited resources and facilities.

Biography

Mousa Ahmad Qatawneh is a highly qualified Jordanian doctor specializing in Pediatrics Hemato-Oncology and Hematopoietic stem cell transplantation. He has extensive training from top medical institutions, including Queen Rania Children's Hospital and Hospital Santa Maria della Misericordia in Italy. He is currently a senior specialist at Queen Rania Children's Hospital, responsible for the Hematopoietic stem cell transplantation unit in the Pediatric Hematology Division. He has participated in numerous courses and conferences and published research papers in prestigious journals.

His research focuses on hematopoietic stem cell transplantation, thalassemia, COVID-19 infection, and other areas related to Hemato-Oncology in children. He is also a frequent speaker at international conferences in the field of Hemato-Oncology.

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Effect of DMT1 gene mutation on pathophysiology of iron deficiency anemia

Background: Iron deficiency anemia is the burning health issue of adults as well as children in India, which is evaluated by deficiency in serum ferritin level, Means Corpuscular Hemoglobin (MCH) and Mean Corpuscular Volume (MCV). DMT1 mutations primarily affect iron utilization and not absorption. Thus, we aimed to evaluate the correlation of clinical pathophsiology and DMT1gene variation in iron deficiency anemia patients.

Methods: A total 140 IDA patients and equal numbers of control were registered for study. Hemogram analysis was done by automated hemato -analyzer while CRP and Serum ferritin test done by ELISA method. ESR test was done as per Wintrobe method. Genotyping of DMT1 gene variation was done by using PCR-RFLP method

Result: Two DMT1gene mutations, namely the IVS4+44C>A and c.2044T>C were analysed. Amongst the patients, 14 were heterozygous for IVS4+44C>A mutation. Twenty-eight patients were heterozygous for c.2044T>C mutation while 08 homozygous for IVS4+44C>A genotype and 9 were homozygous for c.2044T>C genotype. Controls were presenting 12 heterozygous for IVS4+44C>A mutation and 11 heterozygous for c.2044T>C mutation while 4 homozygous were identified for IVS4+44C>A mutation and 5 homozygous were reported for c.2044T>C genotype in IDA patients. Severity of clinical symptoms is worsening in non-mutant.

Conclusion: After studying the DMT1 polymorphism on iron deficiency anemia, the frequency of clinical symptom is found to be less severe in IVS4+44C>A and c.2044T>C mutation. While, finding of this research also showed the IVS4+44C>A and c.2044T>C mutation may be predictor of iron deficiency anemia and need diagnosis of these DMT1 variants genotype.

Audience Take Away Notes

- When investigating microcytosis of unknown origin, in forms of iron deficiency anemia refractory to classical oral or intravenous iron administration, or iron deficiency anemia coexisting with iron overload of different parenchyma organs
- It is important to genotype the unexplained microcytic ID or IDA so as to avoid unnecessary investigations and iron supplementation which would be deleterious in such cases
- May have therapeutic implications in terms of targeted therapy e.g. use of Hepcidin
- These genetic forms of iron deficiency anemia could be models to further increase our knowledge concerning iron metabolism and erythropoiesis

Identifying the specific gene mutations contributing to iron metabolism

1. Would be enormously useful in treatment decisions
2. Genotype-phenotype correlation, leading, in turn, to more accurate genetic counseling regarding prognoses and associated illnesses
3. Each mutation identified would lead to better understanding of the various proteins that interact to regulate iron homeostasi
4. Would allow targeted use of the drug

Biography

Presently I am working In Shyam Shah Medical College Rewa and pursuing my PhD from Girls PG Degree College affiliated with Awadhesh Pratap Singh University. My thesis topic is "Role of FPN1, matriptase-2 and DMT1 genetic variation on pathophysiology of iron refractory iron deficiency anemia syndrome & I have worked in research project entitled "effect of alpha globin gene numbers, XMN1 polymorphism and HFE mutation on the phenotype of microcytic anemia/ thalassemia" and Study of hereditary haemochromatosis and effect on iron status in Kol tribals: in special reference of Rewa district of Madhya Pradesh". My area of research is medical molecular biology and I have expertise in various modern techniques, research project writing, report writing, and publication of research outcomes. As a researcher, I have worked at AIIMS New Delhi, APS University Rewa, and S.S. Medical College Rewa (M.P.). I have been awarded 02 ICMR-SRF fellowships and have published 45 research papers in reputed international and national journals with high impact factors. Throughout my career, I have participated in numerous conferences, workshops, and scientific meetings and presented my research.

Dr. Sakshi Yashwant Patil[1*], Dr. Anant Patil[2]

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Systemic Lupus Erythematosus (SLE) Probably Induced After COVID-19 Vaccination

Coronavirus disease 19 (COVID-19) pandemic which is caused by Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) remains a global threat to humanity and has become challenging even for the most durable healthcare systems.

In this moment of misery and lack of control over the infection, it seems that we may combat the problem through one of the most effective public-health interventions—vaccination. The COVID-19 vaccines are widely credited for their role in reducing the spread, morbidity, and mortality caused by the disease. However, various Immune Mediated Diseases (IMD) flares or new disease onset after SARS-CoV-2 vaccination were observed across the world.

These adverse reactions to vaccines may be viewed as a result of the interaction between susceptibility of the vaccinated subject and various vaccine components. Among the implicated mechanisms for these reactions is molecular mimicry. In this, the resemblance between specific human protein and vaccine element can trigger activation of T-cell and B-cell causing immune cross-reactivity explaining post-vaccination autoimmune phenomenon.

Systemic Lupus Erythematosus (SLE) is a perfect example of such an autoimmune disease. SLE is generally found in young females in which organs undergo damage initially mediated by tissue-binding autoantibodies and immune complexes. Though, it is considered as a genetically predisposed disease, many cases reported are viral infection, vaccine, drug induced or idiopathic in nature. Relations between COVID-19 vaccination and SLE are not clear. Here, we report a case of SLE manifestation probably induced by *Covishield vaccine in a 22-year-old female. Initially thought to be chondromalacia, was later diagnosed as SLE. After initial presentation with right knee pain following first dose of COVID-19 vaccine, she was treated with physiotherapy and analgesics resulting in almost 80% benefit in the symptom relief. After second dose, she developed petechial rashes over lower limb, bipedal edema and polyarthralgia and confirmed as SLE with laboratory investigations.

* Covishield is a brand name for Oxford–AstraZeneca COVID-19 vaccine

Keywords: Systemic lupus erythematosus, Covishield vaccine, Molecular mimicry.

Audience Take Away Notes

- Audience will get a glimpse of how molecular mimicry works and causes immune cross- reactivity
- A brief presentation of a reported case of SLE probably induced by covid vaccine
- An open discussion on covid vaccine and its adverse effect

Biography

Dr. Sakshi Y. Patil is an MBBS (Bachelor of Medicine and Bachelor of Surgery) graduate from Dr. Vasantrao Pawar Medical College, Nashik since March 2023. She is currently affiliated with Yashwant Hospital at Nashik where she is working as a Consultant General Physician. She has predominantly worked on drug-induced autoimmune disorders and has published a case report of a lupus patient probably triggered by covid vaccine. Outside of work, she enjoys painting and has held many exhibitions for her art.

Vani Rajashekaraiah
Department of Biotechnology, JAIN (Deemed-to-be University), Bengaluru, Karnataka, India

Antioxidants as modulators of stored blood and its components

Blood banking brings the potentially life-saving benefits to the patients who require transfusion. Transfusion medicine has undergone advancements such as component therapy, where cellular components including, packed erythrocytes & platelet concentrates are transfused. Erythrocytes can be stored up to 35 days in CPDA-1 and 42 days in AS-7 (additive solution-7) at 4˚C. Platelets are stored for 3-5 days in plasma at 22-24˚C. Blood components exhibit morphological, biochemical, and physiological changes during storage collectively referred as "storage lesions", which affect the survival and optimal function of transfused components. Oxidative Stress (OS) is the primary cause of storage lesions in blood and its components. The accumulation of reactive species during storage is associated with the impairment of antioxidant defenses and oxidation of lipids and proteins. Antioxidants can scavenge free radicals, reduce oxidative stress and maintain cellular redox balance. Hence, storage solutions enriched with antioxidants can counteract oxidative damage and enhance antioxidant defenses. Therefore, antioxidants as additives could be safe and effective alternatives to improve the efficacy of stored blood components.

The continual modulations occurring in stored erythrocytes and platelets with antioxidants as additives have been investigated. Firstly, Vitamin C (10, 30 & 60 MM), L-Carnitine (10, 30 & 60 MM), Curcumin (10, 30 & 60 MM) in CPDA-1 have been employed as single antioxidants during 35 days of erythrocyte storage. Vitamin C protected the erythrocytes from oxidative damage and increased protein sulfhydryls levels. L-Carnitine maintained hemoglobin and sulfhydryls throughout the storage. Curcumin maintained hemoglobin and modulated antioxidant enzymes throughout storage. Erythrocyte storage in AS-7 (FDA approved) have been further explored with combinations of Vitamin C & L-Carnitine (both at 10 MM), Vitamin C & Vitamin E (10 MM & 2 mM), and Vitamin C & N-acetyl cysteine (10 MM & 0.5MM). These combinations have been effective in enhancing antioxidant defenses and attenuating oxidative damage. Cell aging as one of the significant factors in banking has also been studied, where responses of young and old erythrocytes have been investigated. OS levels were found to be higher in old cells than young cells. The Oxidative changes occurred in young cells from day 25, whereas in old cells from day 5 itself. Young erythrocytes could endure OS more efficiently than old erythrocytes.

Secondly, Platelets were banked in additive solutions (PAS) as a substitute for plasma to extend storage period. The alterations in platelets stored with antioxidant additives such as L-Carnitine (10, 50 &100 MM), Coumaric acid (10, 50 &100 MM), *Carica papaya*/Caripill™ (50 & 100 µg/ml) and *Cassia tora* (50 & 100 µg/ml) have been analysed. These antioxidant additives have been effective in diminishing oxidative stress, thereby improving the efficacy of platelets. Oxidative stress in platelets stored in commercially available PASs such as, SSP+ and PAS-G have been determined, and these additive solutions have augmented antioxidant enzymes and platelet functions during 7 days of storage. These findings lay foundations towards development of effective storage solutions and better blood banking practices.

Audience Take Away Notes

- Audience will gain insights into the main factors leading to storage lesion and the effects of antioxidant additives in storage solutions with reference to erythrocytes and platelets
- Audience can employ different markers of storage lesion to assess banked blood
- This basic research lays foundations towards improving the efficacy of stored blood components and better blood banking
- List all other benefits
- Development of effective storage solutions

Biography

Dr. Vani Rajashekaraiah, Professor, Department of Biotechnology, JAIN (Deemed-to-be University), Bengaluru, India, obtained doctoral degree in Zoology from Bangalore University, Bengaluru in 2008. She has 16 years of teaching proficiency in Molecular Biology and Genetics, 20 years of research experience in Oxidative Stress Biology. Her current research focus is on improving blood storage solutions through antioxidant interventions. Her research achievements include 36 publications in reputed journals with 490 citations and one patent published in India in 2020. She has received CSIR research fellowship in 2002, Seed Money to Young Scientist for Research in 2013 from Government of Karnataka, India.

Gilad Itchaki
Sackler University School of Medicine, Tel-Aviv University, Meir Hospital, Israel

First line treatment in chronic lymphocytic leukemia-The agony of choice

Chronic Lymphocytic Leukemia (CLL) is the most common leukemia in the Western World. Therapeutic options have changed dramatically over the last decade, from ineffective chemotherapy to highly specific small molecules that target crucial pathways in CLL cells. The first available drug was ibrutinib, a Bruton-Tyrosine Kinase (BTK) inhibitor, that has revolutionized CLL treatment. Ibrutinib is an oral agent that is given indefinitely until disease progression or unacceptable toxicity. Accumulating adverse events over time, and particularly cardiovascular events, limit drug administration. More specific, second generation BTK inhibitors, are currently available, have a superior safety profile and might even be more effective. Another therapeutic option is giving a time-limited course of the BCL2-inhibitor, venetoclax-based treatment. This agent is highly effective and achieves high rates of undetectable Minimal Residual Disease (MRD), allowing discontinuation of venetoclax after a defined course of therapy. The choice between these options depends on patient preferences, patient's comorbidities, and disease-specific predictive markers, such as immunoglobulin heavy chain (IGHV) rearrangement, deletion 17p, and somatic TP53 mutations. Recently, a time-limited combination of ibrutinib and venetoclax has gained increasing interest, as it may overcome some of the adverse prognostic markers associated with disease progression. In my talk I will discuss the evidence for the various therapeutic regimens, their advantages, and shortcomings, and will present my take on first line CLL management in 2023.

Audience Take Away Notes

- Learn about available first line treatment in CLL
- Will be familiar with recent pivotal studies in CLL
- Utilize prognostic markers in therapy decision-making
- Learn concepts to guide choice of therapy

Biography

Dr. Gilad Itchaki graduated from the Hebrew University in Jerusalem and subsequently completed his Internal Medicine residency and Hematology fellowship at Rabin Medical Center, Petah Tikva. He trained at Dana-Farber Cancer Institute (DFCI) in Boston in the field of CLL within the lymphoma-group, and under the mentorship of Dr. Jennifer Brown. During this period, he also trained at the Bing Center for Waldenström's macroglobulinemia (WM) at DFCI under Dr. Jorge Castillo and Dr. Steven Treon. Dr. Itchaki is the Head of Hematology at Meir Hospital, Kfar-Saba, Israel. He is also the Secretary of the Israeli CLL Study Group.

Dr. J. Somasekar
Department of Computer Science and Engineering, Gopalan College of Engineering and Management, Bangalore, Karnataka, India

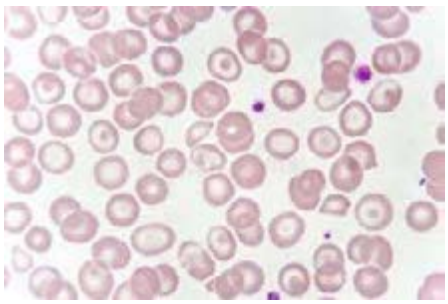
Microscopic image analysis of red blood cells for anemia diagnosis

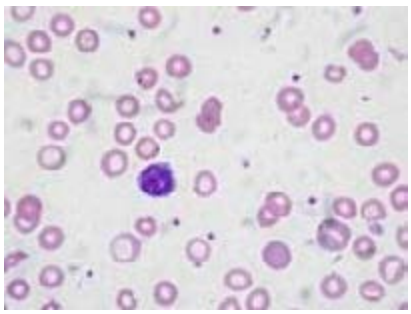
Anemia is a common blood disorder that affects an estimated 1.62 billion people worldwide, which is approximately 24.8% of the global population. Women and children are particularly vulnerable to anemia, with an estimated 29% of non-pregnant women, 38% of pregnant women, and 47% of children under the age of five affected globally. Anemia can be diagnosed through blood tests, which measure the levels of red blood cells, hemoglobin, and other components in the blood.

Image analysis plays a crucial role in the diagnosis of anemia using microscopic blood images. The following are some of the ways in which image analysis can be used in the evaluation of anemia:

- Blood smear analysis is a common technique used to evaluate the morphology of red blood cells. Automated image analysis systems can be used to quantify the number, size, and shape of the red blood cells in a blood smear, which can provide information about the severity and type of anemia.
- Hemoglobin measurement is a critical component of the diagnosis and management of anemia. Automated image analysis systems can be used to accurately measure the level of hemoglobin in the blood by analyzing the color of red blood cells in microscopic images.
- Iron deficiency is a common cause of anemia. Image analysis can be used to assess the amount of iron in red blood cells and evaluate iron stores in the body.
- Image analysis can be used to differentiate between different types of anemia, such as iron-deficiency anemia, megaloblastic anemia, and sickle cell anemia, by analyzing the morphology of red blood cells.

Overall, image analysis is a powerful tool in the diagnosis, management, and monitoring of anemia using microscopic blood images. It provides objective and quantitative data that can aid in the diagnosis and treatment of the disease, leading to better patient outcomes. The following are sample microscopic blood images of anemia for images analysis leads to automatic diagnosis and classification of anemia.





Audience Take Away Notes

- Role of image analysis in detection/diagnosis of anemia disease
- The research can be carried out based in the insights of the image analysis role
- The faculty can use this as a case study of image processing while teaching to the students
- The emerging technologies AI, ML can be used for more accurate diagnosis or classification of the disease

Biography

Dr.j.Somasekar received a Ph.D. degree in Computer Science and Engineering (CSE) from JNTUA, Andhra Pradesh in 2017, and M.Tech. Degree from the National Institute of Technology Karnataka (NITK), Surathkal in 2010. He is currently working as a Professor and HOD at the CSE Department, Gopalan College of Engineering and Management, Bangalore. As a resource person, he has delivered 148 Technical Talks in the emerging technologies. He got an ALL India Rank of 43 in the GATE exam with a 98.4 percentile. He is having more than 16 years of experience in teaching and 6 years of experience in research. He has published 29 research articles in leading journals (SCI & SCOPUS indexed), and conference proceedings. His research interests include Data Science; Image processing, Machine Learning, Big Data Analytics and ML for Cyber security.

Emanuele Calabro[1*], Salvatore Magazu[2]

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Hemoglobin denaturation occurs under man-made electromagnetic fields – is there any correlation with some anemia diseases?

Proteins denaturation is a phenomenon that can be due to some diseases or external stresses. In particular, hemoglobin can be subjected to denaturation (unfolding) of its secondary structure due to various causes, that is represented by a decrease in intensity of the α-helix/β-sheet ratio in the Amide I and II infrared regions. Hemoglobin is a tetrameric heme-protein in erythrocytes that is responsible for binding molecular oxygen transporting bound oxygen throughout the body to be used in aerobic metabolic functions. In previous studies, hemoglobin unfolding and aggregation was found in several anemias such as in sickle cell anemia and in leukemia (Wilson et al., 1974; Tripette et al. 2009, Zandecki et al. 2007, Besa et al. 1992, His 2012).

Furthermore, some studies carried out in our laboratories provided the result that a few hours exposure of hemoglobin in water solution to man-made electromagnetic fields (EMFS) at 50 Hz EMF-1 mT (Magazu et al. 2010, Calabro and Magazu, 2014), at 200 MT static magnetic field (Magazu et al. 2012) and 900 MHZ, 1800 MHZ EMFS (Calabro and Magazu 2015, 2016) induced unfolding in the secondary structure of hemoglobin, represented by a partial transition from the α-helix component to the β-sheet feature. The evidence of aggregation phenomena in some anemia diseases leads us to consider the possibility that man-made EMFS may be a contributing factor to the onset of certain blood diseases. Otherwise, some researchers already highlighted a possible correlation between the appearance of the peak incidence at around age 3 in childhood acute lymphocytic leukemia and proximity to power lines and, therefore, exposure to extremely low frequency electromagnetic fields (Milham and Ossiander, 2001).

In fact, these authors reported in their study that childhood leukemia has been associated with residential EMFS. Indeed, in states with above 75% of residences served by electricity, leukemia mortality increased with age for single years 0-4, while in states with electrification levels below 75% a decreasing trend with age occurred ($P = 0.009$). In particular, at ages 2-4 there was a 24% increase in leukemia mortality for a 10% increase in percent of homes served by electricity (95% confidence interval). Other authors confirmed this correlation between elevations in rates of childhood leukemia and proximity to power lines that cannot be explained by random variation (Ahlbom et al., 2000; Angelillo and Villari, 1999; Greenland et al., 2000; Wartenberg, 1998; Wertheimer and Leeper, 1979).

However, a review from 2000 to 2019 concluded that there is strong evidence that magnetic fields associated with extremely low frequency EMF put children and adults at risk for leukemia (Carpenter, 2019).

In conclusion, even if there is no irrefutable demonstration that man-made EMFs cause blood diseases, it is a matter of fact that exposure to man-made EMFS induces unfolding and aggregation in hemoglobin, which is an important characteristic of several anemia diseases. Therefore, it can plausibly be assumed that EMFS can be a cofactor of some blood diseases.

Biography

Emanuele Calabrois Full Professor of Physics and Environmental Physics at the Technological Technical Institute of Messina (Italy). He received the National Qualification as University Professor in Applied Physics and in Experimental Physics of matter and the International Prize for Excellence in Research by the Academic Brand Awards-2018. He is Editor of several ISI journals. He has been invited to many international conferences, published more than 120 refereed papers in ISI journals, monographs and book chapters.

Imene Hocine

University Hospital of Bab El Oued - Laboratory of Hemobiology and Blood Transfusion- Hemostasis Unit, 16008, Algiers, Algeria

Similarities of antiphospholipid antibodies in HIT and APS patients with heparin-platelet factor 4 antibodies

Heparin-Induced Thrombocytopenia (HIT) is a prothrombotic autoimmune disorder confirmed by the existence of Heparin-Platelet Factor 4 (HPF4) antibodies. The aim of this work is to study the possible relationship between anti-HPF4 and antiphospholipid antibodies (APLS) that may explain the discrepancies observed in patients with a suspected HIT (HIT group) with positive immunoassay (HPF4-Elisa) and negative functional assay (heparin induced platelet aggregation test). So, we performed H-PF4 antibodies research in 31 APS confirmed patients (APL group). All tests performed have been compared to normal controls (n = 34). We found anti-H-PF4 in 7/31 patients of APL group. In parallel, we search for APLS in 9/34 patients tested positive for anti-HPF4 in HIT group, all of them were positive. All specificities were observed in the two anti- HPF4 positive groups (aβ2GP1 IgM/IgG/IgA, ACL (IgM/IgG/IgA, APS-PT IgM/IgG). The most associated antibodies with anti-HPF4 are the anti ß2Glycoprotein1 (Odds ratio = 50.1). We suggest that the presence of APLS in HIT group with anti-HPF4 could be the cause of the discrepancies. In addition, we performed the Heparin Neutralization Assay (HNA) which is specific for anti-HPF4; neutralization was obtained for patients exposed to heparin. Furthermore, we suggest that we should perform a larger cohort to confirm the causal relationship of APLS and also to expand the tests allowing the differentiation between these autoantibodies.

Audience Take Away Notes

- This presentation allows the audience to gain knowledge about HIT diagnosis and especially abouts the discrepancies between HIT diagnosis tests that could be encountered in their laboratory routine as scientists. In addition, it may help to better understand these diagnostic discrepancies taking into account the commonalities between antiphospholipid syndrome and Heparin-induced thrombocytopenia
- It could guide the audience to a better diagnostic approach in case of discrepancies in HIT tests by suggesting a diagnostic algorithm
- This research is a hypothesis of the role of Antiphospholipid antibodies in HIT diagnosis, which deserves to be extended with integration of extensive tests. For these reasons, this work should be used by other faculty
- This research provides a practical solution of the observed discrepancies in HIT diagnosis, which is a practical diagnosis algorithm, which seems to be a better alternative and more efficient that some tests, requiring specific conditions
- This work provides new information about the discrepancies in HIT diagnosis: antiphospholipid antibodies could explain the discrepancies observed between HIT diagnosis tests based on the known commonalities between HIT and APS in terms of an autoimmune pathophysiologic mechanism. It will improve the accuracy of HIT diagnosis by a better use of the widely immunoassays: the HPF4-ELISA and a limited use of the functional testing by addition of other parameters and tests

Biography

Dr. Imene Hocine studied pharmacy and graduated as pharm in 2011, and then she joined a Specialized Post graduate Medical Studies in Hemobiology and Blood Transfusion at Algiers University 1, Algeria, where she received PhD degree in 2016. During 18 months, she worked as scientist and researcher in the Hemostasis Department of the University Hospital of BAB EL OUED in Algiers. In 2018, she obtained the position of Professor Assistant at Algiers University 1. She published 1 research article in ELSEVIER journal.

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Special considerations regarding anticoagulation in COVID-19: Bleeding risk scores evaluations

Thromboembolism seems to be a challenging problem globally in coronavirus disease-2019 (COVID-19). Hypercoagulable states with unusual higher tendency for thrombotic events were described among severe and critically ill patients with COVID-19 infection with lower survival rates. Several studies have assessed the role of anticoagulation (AC) to prevent the thrombosis problems. However, Anticoagulation therapy is a treatment that needs special considerations regarding its dosing and monitoring to minimize the risk of bleeding. Our study aimed to compare the different patterns of AC in patients with COVID-19 and compare two of the validated risk scores in the prediction of bleeding events. We retrospectively reviewed medical records of COVID-19 patients who assigned for empiric anticoagulants. The main outcomes included survival, bleeding events and the need of mechanical ventilation. The predictive accuracy of HAS-BLED and ORBIT scoring systems were assessed by applying the we applied the HAS-BLED and ORBIT bleeding risk scores to assess the Receiver Operating Curve (ROC) and c-statistics. A total of 921 patients were eligible for the study according to the inclusion criteria. Of them, 51.6% received therapeutic AC while prophylactic AC dose were received by 48.4%. D-dimer and C-Reactive Protein (CRP) were significantly higher among patients received therapeutic AC ($P<0.001$) with a significant prolongation of hospital stay and mechanical ventilation need (*P-value* < 0.001 and 0.011, respectively). The mean±SD of HAS-BLED and ORBIT scores were 2.53 ± 0.93 and 2.26 ± 1.29, respectively. The two risk scores differed significantly for major bleeding events and clinically relevant non-major bleeding ($P<0.05$) with modest predictive performance. To sum up, therapeutic AC showed an association with higher incidence of bleeding events. The HAS-BLED scoring system showed higher accuracy than ORBIT in the predictability of bleeding risk.

Audience Take Away Notes

- In this study, we showed that the HAS-BLED scoring system more precisely predicted clinically relevant bleeding events when compared with the ORBIT score. The HAS-BLED and ORBIT scores may offer hopeful tools to measure the bleeding risk
- The application of these bleeding risk scores can be beneficial in clinical practice by drawing attention to bleeding risk factors that could be modified; hence; may alleviate or eliminate the potential risk. Our analysis consistently confirmed that a higher risk score in the HAS-BLED system was associated with the evaluated outcomes: major bleeding; non-major bleeding; and all-cause mortality. The association between bleeding events and in-hospital mortality is well documented, consistent with our results, where the HAS-BLED score was related to bleeding events and, thus, to mortality
- The HAS-BLED score can be utilized for clinical or electronic alerts to 'flag up' patients with a potential risk of bleeding for more careful evaluation and medical follow-up and to draw more attention to potential bleeding risk factors that can be modified
- An objective assessment of the bleeding scores before the beginning anticoagulation therapy would provide a way to accurately weigh up the potential benefits and risks

Biography

Dr. Hasnaa Osama studied Pharmacy at Beni-suef University, Egypt and graduated in 2010. She then worked as a demonstrator in clinical pharmacy department in her college. She received her PhD degree in 2020 at the same institution. She was a postdoctoral fellow at Alberta University, Canada. She has published more than 20 research articles in SCI (E) journals.

Mahmoud Ibrahim Elbadry[1*], Ahmed Tawfeek[2], Mohammed G. Abdellatif[3], Eman H Salama[2], Ahmed Abudeif[4], Hany Mahmoud[5], Mohamed Ezeldin[6], Rasha Mokhtar Abdelkareem[7], Usama M Rashad[8]

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COVID-19 related unusual thrombotic events in young adult non-critically ill patients

COVID-19-related symptoms, risk factors for thrombosis, coagulation, and inflammatory parameters were compared in 145 previously healthy non-critically ill young adults, with 29 patients reporting Uncommon Thrombotic-Events (UTEs) and 116 not experiencing thrombotic-events. In UTEs patients, inflammatory-indices, coagulation, and Pro-Thrombotic-Platelet-Phenotype (PTPP) were considerably higher than in those without. UTEs patients were divided into non-TG and TG-subcohorts based on the presence of Thrombophilic Genes (TG), coagulation, and inflammatory markers. Among the 38 UTEs were splanchnic vein thrombosis (n=11), stroke (n=6), cerebral vein thrombosis (n=5), thrombotic microangiopathy (n=4), limb-ischemia and IVC thrombosis (three each), STEMI (n=2), SVC thrombosis (n=2), upper limb DVT, and retinal vein thrombosis. We discovered a 55% prevalence of TG, primarily due to heterozygous FII-G20210A, JAK2-V617F, protein-S, and antithrombin-III deficiency, as well as a significant (76.9%) incidence of venous-UTEs, multiple-vessel thrombosis, and recurrence rate among TG vs non-TG patients. The presence of JAK2-V617F, and FII-G20210A mutations was linked with SVT. Thrombosis in the non-TG subcohort was associated with more hemorrhagic problems, thrombosis progression and a significantly higher level of inflammatory markers, PTPP, MPV, VWF, and FVIII, which remained high for up to six months, as well as elevated D-dimer. Acquired and inherited thrombophilia with endotheliopathy appeared to be a relevant mechanism to explain the UTEs occurrence that is not correlated to COVID-19 severity.

Audience Take Away Notes

- Our study has a wide range of clinical implications
- First, physicians should be aware that UTEs can develop 5 to 30 days after COVID-19 infection in young adult noncritical patients
- Second, depending on the persistence of risk factors and thrombosis sites, therapy time should be customized for each patient. Although we have 6 months of follow-up data, the clinical importance of persistent elevations of D-dimer, VWF antigen and thrombophic genes on thrombosis recurrence is still a topic of controversy, thus close monitoring and more research are recommended for these individuals
- Third, D-dimer with VWF level and activity tests are widely available and can be used to screen patients for a high risk of thrombosis linked to COVID-19

- This study speculated the effect of COVID-19 in systemic coagulation activation and whether or not the undiagnosed inherited and acquired thrombophilia alter coagulation activation and the course of non-critically COVID-19 infection
- Our findings of the possibility of a persistent high elevation of D -dimer, VWF antigen and FVIII and pro-thrombotic platelet phenotype for more than 6 months after infection despite lacking COVID-19 infection severity should influence our behavior in COVID-19 disease management as well as the thromboprophylaxis
- The identification of these genetic defects should also modify the duration of the anticoagulant therapy and secondary thromboprophylaxis
- Our findings pave the way for more investigation into COVID-19's potential function in the activation of thrombophilic genes

Biography

Dr. Mahmoud studied Medicine at the Sohag University, Egypt and graduated (M.B.B.Ch in 2007), then M.Sc, in 2012. He then joined the research group of Prof. Nakao at Cellular Transplantation Biology Faculty of Medicine, Institute of Medical Pharmaceutical and Health Sciences, Kanazawa University, Japan. He received his medical doctorate, PhD degree in 2019. He obtained the position Lecturer of Internal Medicine (Hematologist) at the Faculty of Medicine, Sohag University. He has skilled in culturing induced pluripotent stem cells with different HLA-genotypes from the monocytes of patients with aplastic anemia. He has published more than 35 research articles.

Merve Pamukcuoglu
Bilkent City Hospital of Ankara, Turkey

Anicteric Veno-occlusive Disease

Hepatic Veno-Occlusive Disease (VOD) / Sinusoidal Obstruction Syndrome (SOS) is a mortal disease being seen in Hematopoietic Stem Cell Transplantation (HSCT). It was seen in almost 14% of all HSCT cases (adult and pediatric) and 30% in pediatric patients. Whereas anicteric VOD was seen in 15% of adult cases, and 29% in pediatric cases. The veno-occlusive disease causes multiorgan failure that may result in over 80% of mortality. Because of this reason early diagnosis and treatment of VOD are very important.

Risk Factors: There are some risk factors determined after HSCT as follows:

1-Transplant-related risk factors: allogeneic HSCT, unrelated donor, HLA-mismatch donor, myeloablative conditioning regimen, busulfan-based conditioning regimen, Total Body İrradiation (TBI) -based conditioning regimen, non-T-cell depletion graft, second HSCT, using sirolimus, methotrexate, and cyclophosphamide for Graft Versus Host Disease (GVHD) 2-Disease and disease-related risk factors: over 4 years old and adult patients, using norethisterone, the patients who had lower than 90% of Karnofsky score, gen polimorfizim (such as GSTM1, GSMTT1, heparanase), advanced disease (second CR or relapse), metabolic disease, deficiency of AT III, t-PA or active protein C resistance, thalassemia patients

3-Hepatic risk factors: higher transaminase level (over 2,5 times normal level), higher bilirubin level (over 1,5 times normal level), cirrhosis, hepatic fibrosis, active viral hepatitis, hepatic irradiation, previous using of gemtuzumab ozogamisin, using of hepatotoxic drugs, iron overload.

Pathogenesis: Sinus endothelium injury by toxic metabolites is the main cause of VOD. After this injury, a local inflammatory response occurs. Activation of the coagulation system and fibrinolytic system occurred subsequently. In the advanced stage of this events will end with hepatic necrosis. Out of sinus endothelium, hepatocyte that settles in sinus endothelium was also injured. Because of the damage to sinus endothelium, endothelium cells begin to separate from each other, and cell and cell debris begin to move to the Disse spaces. This obstructs the venous lumen and portal hypertension occurs. As a result; hepatic necrosis and centrilobular hemorrhagic necrosis have occurred. Local cytokines and coagulation cascade affect all these events.

ClinicFindings: Weight gain, volüme overload (acid), painful hepatomegaly, icterus, and multiorgan failure (pulmonary and renal failure and encephalopathy) are the clinical findings that were seen in classic VOD.

Classical VOD has mostly seen in the first 3 weeks after HSCT and 15-20% of classical VOD was seen after the first 3 weeks of HSCT.

Criteria Used in Diagnosis: Baltimore criteria and modified Seattle criteria have been used to diagnose classical VOD until recent years. Europen Bone Marrow Transplantation (EBMT) criteria have been determined for pediatric and adult patients. A high bilirubin level is the mandatory criterion in Baltimore criteria, however, a high bilirubin level is not a mandatory criterion in Seattle criteria. For the EBMT criteria first 21 days of HSCT high bilirubin level is a mandatory criterion, after the first 21 days high bilirubin level is not mandatory.02

Baltimore Criteria:

1. Bilirubin level > 2 mg/dl (mandatory)

2. Wieght gain (bazal level > 5%)

3. Hepatomegaly

4. Acid

Seattle Criteria:

1. Bilirubin level > 2 mg/dl

2. Acid or weight gain (basal level > 2%)

3. Hepatomegaly and right upper pain in the abdomen

Two of the three criteria should be positive till +20 days of HSCT

EBMT Criteria:

Classical VOD is seen in the first 21 days after HSCT. Bilirubin level should be □2 mg/dL and include two of the following criteria:

1. Painful hepatomegaly

2. Weight gain >5%

3. Acid

Delayed VOD occurs more than 21 days after HSCT. It is defined as classic signs of VOD lasting more than 21 days or histological evidence of VOD or two or more of the following criteria:

1. Bilirubin level □2 mg/dL

2. Painful hepatomegaly

3. Weight gain >5%

4. Ascites and hemodynamic and/or presence of VOD as an ultrasound finding

There are some differences in EBMT criteria between adult and pediatric patients: resistant thrombocytopenia is among the VOD criteria for pediatric patients, this condition is not present for adults, bilirubin elevation is mandatory for the first 21 days after HSCT for adults, late-onset VOD seen after 21 days and high bilirubin level is not mandatory, and there is no time limit opposite of pediatric patients criteria.

In recent years, it has been emphasized that the high level of bilirubin is mostly related to the severity of VOD. Mohty et al. determined the severity of VOD in 2016. Accordingly, patients can be graded as mild, moderate, severe, and very severe according to their bilirubin levels, transaminase levels, weight gain, and renal function. Especially in this grading system, bilirubin kinetics were also taken into account. Cases with doubling at bilirubin level in 48 hours should be considered as cases with severe VOD.

While diagnosing VOD, liver biopsy, and ultrasonography are also used. A liver biopsy is a gold standard for the diagnosis of VOD. However, it is not preferred because of thrombocytopenia and coagulopathy.

Ultrasonographically, splenomegaly and ascites are seen, and monitoring of flow towards the paraumbilical vein on Doppler ultrasound indicates the severity of VOD. Reversal of portal venous flow is a demographic finding, but it is seen in the late period of VOD.

How is anicteric VOD defined?

Myers et al. drew attention to the fact that bilirubin values were below 2 mg/dl in 5 cases with VOD that they reported in 2015. In these cases, the reverse portal venous flow was seen ultrasonographically.

In this case series in the literature, patients have all the features of VOD, however, bilirubin elevation was not observed. Anicteric VOD is defined as; those who were diagnosed with VOD and had other criteria for VOD, but had a bilirubin level below 2 mg/dl and did not exceed 2 mg/dl in the follow-ups (8,9). In the survey conducted by Skeens et al. in 2016 with the participation of four countries (physicians and healthcare professionals from America, Canada, Australia, and England), it was stated that 40% of the participants had never had a patient who diagnosis of anicteric VOD (10). The remaining 60% of the participants had patients who had an anicteric VOD diagnosis; perhaps anicteric VOD may be in substantial numbers above the rates reported in the literature. In the same year, Naples et al. reported that 20 of 29 patients had classical VOD (69%), and 9 patients (31%) had anicteric VOD. Naples et al; did not accept

the elevation of the bilirubin and the presence of return flow in the portal vein on Doppler ultrasound as a condition for the diagnosis of VOD. Although it is thought that anicteric VOD is mostly seen in children and if it is seen in adults, it is seen in the days after first 21 days after HSCT; In the article published by Corbacioglu et al. in 2020: it was emphasized that anicteric VOD can be seen as frequently in adults as in children and can be seen in the first 21 days after HSCT. At the same time, in this study, it was shown that bilirubin elevation is more relatedto the severity of the disease in VOD and that the survival of those with anicteric VOD at the 100th day after HSCT is better than those with icteric VOD.

In the study by Mehra et al. presented in 2021 based on real-life data, those with anicteric VOD were included in the patients with late-onset VOD. They noticed that only 2 of the 27 patients with VOD had anicteric VOD, and it was reported that these two patients were seen after the 21st day after HSCT. As mentioned before, bilirubin elevation in the first 21 days is an absolute condition in the EBMT criteria, like the Baltimore criteria, but some patients may have resistant thrombocytopenia (42% of those with classic VOH for this study) and bilirubin elevation may not be seen in the first 21 days. These patients may be diagnosed with VOD. Therefore, the question arises whether the EBMT criteria should include resistant thrombocytopenia for adults as well as for children. The study published by Mohty et al. in 2022 is on patients receiving defibrotide treatment. One hundred and four patients were included in the study; 42 (40%) patients had mild/moderate VOD and 62 (60%) patients had severe VOD.

The primary endpoint of the study was: the determination of the defibrotide side-effect profile; the secondary endpoint: was the determination of the VOD recovery rate and 100-day survival. The mean time to start defibrotide with the diagnosis of VOD was day 0 (days 0-11). Only 30 (29%) of the patients included in the study had anicteric VOD. It has been stated that anicteric VOD is seen at higher rates in pediatric patients, and when the total patient rate is considered, it has been observed that anicteric cases are at a substantial level, constituting 1/3 of the patients. There was no difference between the two groups in terms of the defibrotide side effect profile. Considering the secondary endpoint of disease recovery and 100-day survival analysis; it has been observed that patients with anicteric VOD are more advantageous than those with classical VOZ. To summarize; While classical VOD is a complication that can be fatal with an aggressive course, anicteric VOD is a complication that has the characteristics of classical VOD but has a bilirubin level below 2 mg/dl and a milder course than classical VOD. Compared to classical VOD, there is no time limitation. However, in most of the studies in the literature, it was emphasized that it may occur after 21 days after HSCT. While it is more common in pediatric patients, it should not be forgotten that it can be seen in adults as well. Baltimore criteria are restrictive because they require high bilirubin. While the modified Seattle criteria have more flexible features in anicteric VOD diagnosis, the EBMT criteria seem more ideal than the other two diagnostic criteria. However, it is controversial because the elevation of the bilirubin level is mandatory in the first 21 days after HSCT and does not include the criteria for

resistant thrombocytopenia.

Biography

Merve Pamukcuoglu, MD, earned his medical degree from Ankara University Faculty of Medicine in 1996-2002. She started her internal medicine residency at Ankara Numune Training and Research Hospital in 2004-2009, followed by a fellowship at Gazi University Faculty of Medicine Department of Hematology in 2010- 2015. Pamukcuoglu comple ed her government service obligation at Ankara Numune Training and Research Hospital in 2015-2018. She has been in Minnesota University HOT Department-Masonic Cancer Center at 2018 –2019 as an observer and researcher. She worked as a Hematologist and BMT physician at Bilkent City Hospital of Ankara between 2019-2022. She holds a faulty appointment as an Associate Professor of Medicine on 04/29/2022.Pamukcuoglu has contributed to more than 20 medical journal publications and many oral and poster presentations at national and international meetings. She specializes in caring for patients with benign and malign Hematology, Bone Marrow Transplantation (BMT), and Graft Versus Host Disease (GVHD).

Samiah Shahid*, Humaira Mustafa

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Reciprocal expression of mir-22-3P and BCl11a as circulatory markers for beta thalassemia

Thalassemia is a hereditary disease due to defective globin chain production. This defective globin become the cause of accumulation of excessive globin (unbound) in the erythrocytes and ultimately leads to the ineffective erythropoiesis. Despite the modern technologies, there is no ultimate treatment of thalassemia disease, only management (blood transfusion) is possible. The average life span of thalassemia patient is short (30 years). Circulating microRNAs have been emerged as promising disease biomarkers for diagnostic and therapeutic purpose in many diseases. These are the small non-coding RNA molecules that regulate the expression of genes involved in erythropoiesis and thalassemia. Pakistan is amongst the countries with highest thalassemic burden throughout the world; about 100,000 transfusion dependent thalassemia patients have been reported. According to our best knowledge, there are fewer studies focusing the association of microRNA with beta thalassemia in Pakistan. The aim of this study is to evaluate the expression of miR-22-3p and its target gene BCL11a as circulatory markers for early prediction of thalassemia. The expression level of miR-22-3p and BCL11a was assessed in the plasma of beta thalassemia patients (n=42) and compared with controls (n=25). The relative expression of circulating miR-22-3p and BCL11a was checked by quantitative real time PCR. The expression level of circulating miR-22-3p was up-regulated significantly in the thalassemia patients as compared to healthy control individuals. However, BCL11a levels were significantly downregulated in patients as compared to controls ($P<0.05$). These results suggested that reciprocal expression of miR-22-3p and BCL11a may be used in combination as circulatory marker panel for beta thalassemia. In this study it was also observed that the expression levels of miR-22-3p and BCL11a were not affected by age and gender difference. Th upregulation of miR-22-3p suggested that it may be used as a therapeutic target for treatment of beta thalassemia in future.

Key words: Beta-thalassemia, Hsa-miR-22-3p, BCL11A, □-globin, Circulating, Genetic markers.

Audience Take Away Notes

- The audience will benefit from the research and may check and validate the same in their own population, as there are population differences based on genes
- As micro RNAs are emerging as circulating biomarkers, so this study may open a new horizon for researchers, scientists and medical professionals to use such diagnostic tools for thalassemia
- It will be helpful for researchers, clinicians, hematologists to implement novel methods for diagnosis and treatment
- Yes the research can be used by other faculty members to expand their research and teaching. Future research may be done to find microRNA based therapeutic target for the treatment of thalassemia
- Yes it provides practical solution to thalassemia diagnosis and treatment that is a big problem worldwide
- It will definitely improve the accuracy of a design and provide new information to assist researchers to design a new problem

Biography

Dr. Samiah Shahid studied Masters in Biochemistry at University of Agriculture Faisalabad in 2009 with gold medal. She then joined Biopharmaceutical and biomarker discovery lab at School of Biochemistry and Biotechnology, University of the Punjab and received her Ph.D degree with research on MicroRNA Profiling for early diagnosis, prognosis and treatment of cancer. She has a number of Publications in the field of cancer. She has >10 years of teaching and research experience in medical colleges/research institutes. She is currently working as Associate Professor at Institute of Molecular Biology and Biotechnology/Center for Research in Molecular Medicine, The University of Lahore, Pakistan.

Abdullah Ali Gafar
Ministry of public Health-Yemen, Yemen

Quality of life among leukemia patients in Yemen

Background: Identifying and understanding the factor that influences Health-Related Quality Of Life (HRQOL) in patients with leukemia is critical to creating more appropriate clinical, counseling, and social support programs to develop treatment results for these individuals. The purpose of this investigation is to examine the factor that is related with HRQOL in leukemia patients in Yemen.

Methods: From June to September 2021, a descriptive, cross-sectional investigation was carried out among Leukemia patients who attended at the pediatric leukemia units of Al-Kuwait University Hospital in Sana'a. A total of 344 individuals with Leukemia between the ages of 5 and 18 years old. Data were gathered by utilizing the Pediatric Quality of Life 4.0 as face to face interview with children and their parents. The scale consisted of four domains (Physical, emotional, social, and school functioning) and other related demographic and clinical characteristics of the patients.

SPSS was used for analyzing the data. Patient characteristics were reported as percentages, means, and standard deviations, with the mean being the most significant. As a measure of HRQOL, both the overall HRQOL score and the summary HRQOL scores were reported as mean and standard deviation coefficient tests as appropriate. Two-tailed, p-value <0.05 was regarded statistically considerable.

Results: The findings of the investigation displayed that the Leukemia patients were males with a percentage of (54.9%)The total HRQoL mean score was found to be (50.6±16.5) with the highest mean scores in the social (69.3±20.2) and emotional (55.9±20.7) functioning domains. There was correlation between age, education, residency, and total HRQoL scores, which was statistically significant (P-value<0.05). There was correlation between pre-transfusion Hb level, received chemotherapy, and total HRQoL scores (P-value<0.05).

Conclusions: Appropriate programs focused at providing psychological support to leukemia patients are needed to improve their HRQOL. The results also supported the significance of keeping a hemoglobin level of at least 9-10.5 g/dL prior to the transfusion procedure.

Keyword: Leukemia, Quality of life, Yemen.

Biography

Abdullah Ali Gafer studied Epidemiology at the Al-Razi University, Yemen and graduated as MS in 2021. He then joined the center research, epidemiology in Yemen.

Dr. Noha Hassan Mahboub[1*], Dr. Faten H Abdelazim[2], Dr. Osama Roshdi[3], Dr. Mohamed Al-Shafaey[4], Dr. Mai Khalaf[5]

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Muscle strength and quality of life in children with sickle cell anemia

Sickle Cell Anemia is an increasing global health genetic problem characterized by chronic hemolytic anemia and tissue damage due to repeated microvascular obstruction by sickle shaped cells. Estimations suggest increasing number of infants born with Sickle Cell Anemia by year 2050. Better prediction of the severity of Sickle Cell Anemia could lead to more precise treatment and management. The study objective is to assess the handgrip muscle strength and four important domains of HRQol in children with Sickle Cell Anemia (Physical, Emotional, Social, School functioning). The urgent need for deeper information about future interventions such as a premarital genetic counseling and the potential lifestyle modifications strategies and priorities patient care decisions.

Audience Take Away Notes

- Better prediction of severity of Sickle Cell Anemia could lead to precise treatment and management
- Feel urgency of awareness about future interventions such as premarital genetic counseling and potential life style modification strategies and priorities patient care decisions

Biography

Dr. Noha HassanMahboub graduated from faculty of physical therapy, Cairo University, Egypt with a very good with honor degree. DR. Noha has been working in ministry of health hospitals (MOH) since 2007 Sharkia governorate, Egypt. DR Noha had got a DPT degree 2017, Cairo University. She got a PT specialist degree in 2012. She is a member in general physical therapy syndicate of Egypt (No. 3940).

Thoraya Mohamed Abdel Hamid[1*], Mossad M El Gammal [1], Toqa H Mansour [1], Mohamed A Samra [1], Enas M Radwan[2]

[1]Medical Oncology Department NCI- Cairo University-Cairo Egypt
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The outcome of pediatric-Inspired treatment protocols compared to adult protocol for management of Adolescent and Young Adults (AYAS) acute lymphoblastic leukemia patients

Aim: This retrospective study aimed to evaluate the efficacy and safety of adopting the pediatric-Inspired ALL chemotherapy protocol in treating AYA patients diagnosed with ALL and to compare the clinical outcome with other adult ALL chemotherapy Protocol.

Methods: The study included all patients aged more than or equal to 18 and less than 40 years suffering from ALL/LBL who received treatment at Medical Oncology Department, National Cancer Institute, Cairo University in the period from January 2014 till December 2018.The study approved by the Institutional Review Board (IRB) NCI- Cairo University.

Results: Through this period, 169 patients were assessed and treated. The median age was 26 years (range 18-39 years) with male to female ratio of 1.86:1. Most of the patients (n=108) had received the modified Dana Faber Protocol. Seven patients had received the Total XV protocol, while 54 cases had received modified GMALL protocol. B-cell ALL was reported in 120 patients (72.7%) while 45 patients (27.3%) diagnosed with T-cell ALL. Molecular and cytogenetic analysis for patients with B-ALL showed t (9; 22) in 26.7%, t (4; 11) in 4.2% while t (12; 21) in one case only (0.8%). Table 1 summarized the patients' characteristics. The pediatric-inspired regimens were well tolerated among our patients. When compared to the adult- protocol, the pediatric-inspired regimens were associated with significantly longer DFS (33 vs 18.8 months, p=0.046 Figure 1), While the OS was (26 vs 21 months, p=0.176 Figure 2), and CR rates (91% vs 86%, p=0.515). Also, the pediatric-inspired regimens were associated with lower incidence of septic shock during induction (24% vs 39%, p=0.013), lower incidence of early mortality (20% vs 33%, p=0.059), and shorter period of hospital stay during induction (Mean 31 vs 40 days, p<0.001).

Conclusion: AYA patients should be treated as a unique category of ALL patients. The pediatric-inspired chemotherapy regimens were well tolerated and it was associated with better outcomes in this group of patients

Keywords: Leukemia, Lymphoblastic, Adolescents and Young Adult.

Table 1: Characteristics of the studied population:

Character	Variable	Frequency	Percent
Gender	Male	110	65.1
	Female	59	34.9
Age	<20	25	14.8
	20-	93	55.0
	30-<40	51	30.2
Diagnosis	ALL	165	97.6
	LBL	4	2.4
BMI	<18.5 (Underweight)	12	7.1
	18.5-24.99 (Normal)	86	50.9
	25-29.99 (Overweight)	43	25.4
	30-34.99 (Obese)	18	10.7
	>=35 (Morbid obesity)	10	5.9
Risk Stratification	High risk	100	59.2
	Standard risk	69	40.8
Treatment Received	mDFP	108	63.9
	Total XV Protocol	7	4.1
	mGMALL Protocol	54	32.0

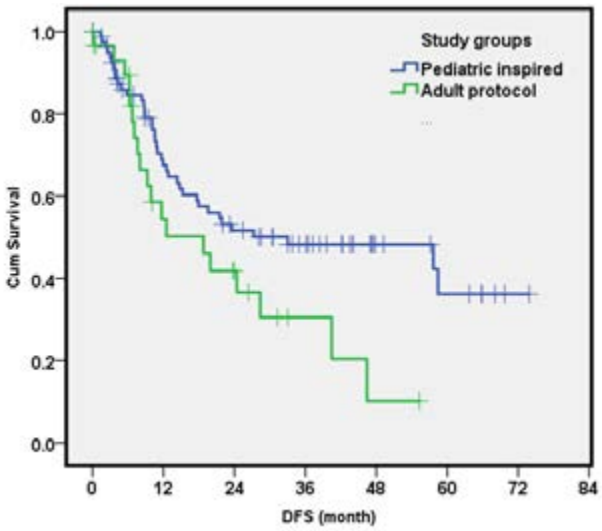
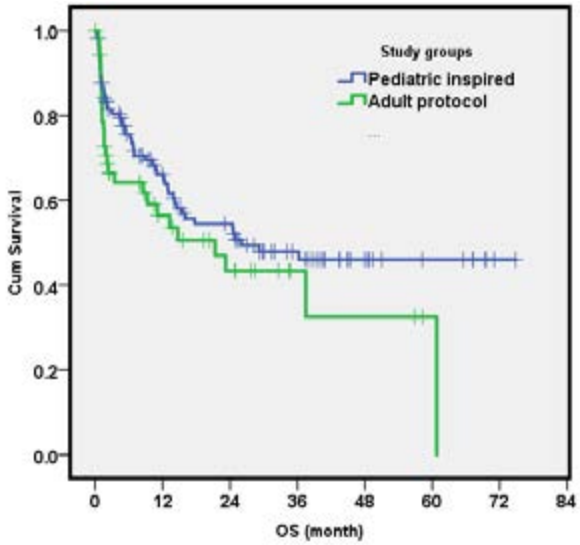


Figure 1: Difference between the two treatment protocols in terms of DFS (p=0.046)

Figure 2: Difference between the two treatment protocols in terms of OS (p=0.176)



Biography

- Thoraya Mohamed Abdel Hamid is M.D in Medical Oncology NCI- Cairo University year 1999 and Professor of Medical Oncology/Haemato- Oncology at the NCI – Cairo University.
- Different positions and training at the hemato/oncology group of Medical Oncology Department NCI-Cairo University since residency till current position.
- Member of the American Society of Hematology International Members Committee (ASH- IMC) from January 2011 up till December 2018.
- Special interest in lymphoid neoplasm with National and international clinical trials participations including CLL11 and Green study for CLL.
- NCI – Cairo representative to the CLL Triallist Collaborative Group year 2007 to 2012.
- Co-editor and reviewer at the Journal of the Egyptian National Cancer Institute.

Dr. Emmanuel Ifeanyi Obeagu
Department of Medical Laboratory Science, Kampala International University
Uganda

An update on anemia among pregnant women: Pregnant teenagers

In pregnancy, anemia is when hemoglobin concentration is less than 11 g/dL in the first and the third trimester or a hemoglobin concentration of less than 10.5 g/dL in the second trimester. Globally, anemia is a public health problem since ancient years. During pregnancy, eradication of anemia is a key component of safe motherhood. Prevalence of anemia among pregnant teenagers is high. Microcytic anemia remains the most common morphological type affecting pregnant teenagers. No formal education and poor antenatal care attendance are associated with an increased risk of anemia among pregnant teenagers.

Keywords: Anemia, pregnancy, pregnant teenagers, women.

Audience Take Away Notes

- Anemia in pregnant teenagers
- Classification of the anemia in pregnant teenagers
- Factors affecting Anemia in pregnant teenagers

Biography

Dr. Emmanuel Ifeanyi Obeagu obtained PhD in Hematology and Blood Transfusion Science from Imo State University in 2019. He joined Kampala International University, Western Campus, and Uganda 2022. He performs dual roles in academics and Research. He is a passionate researcher who has published many papers in reputable Journals both locally and internationally and has earned many international awards through dedication. He is an editor to many journals and also a reviewer to many journals. He attends many conferences on different capacities.

Oluwatoyin D. Adeniyi[1], Abideen Olurotimi Salako[2*], Oluwatosin O. Odubela[2], Ogochukwu Sokunbi[2], Christy A. Okoromah[2], Adebola Akinsulie[2]

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[2]Department of Paediatrics, Lagos University Teaching Hospital, Lagos, Nigeria

Prevalence and associated risk factors of myocardial ischemia in children living with sickle cell disease at a tertiary hospital in Lagos, Nigeria: A comparative cross-sectional study

Background: Myocardial Ischemia (MI) in children living with sickle cell anemia (SCA) is rarely reported, especially in low- and middle-income countries like Nigeria. The occurrence of MI among children living with this disease could portend untoward outcomes on their quality of life and survival. The aim of this study was to determine the prevalence and associated risk factors of MI in children aged six months to 18 years living with SCA during a vaso-occlusive crisis (VOC) compared with those in steady state at the Lagos University Teaching Hospital.

Materials and methods: This prospective cross-sectional comparative study was conducted to determine the prevalence and associated risk factors of MI among 125 children living with SCA in VOC aged six months to 18 years and 125 age and sex-matched controls in steady state. MI was determined using cardiac troponin T (cTnT) and electrocardiography (ECG) assessment. Statistical significance was set at p-value < 0.05 (95% confidence interval).

Results: The prevalence of MI using cTnT alone in children with SCA during VOC and steady state was 42.4% and 23.2%, respectively. Comparatively, using ECG alone, the prevalence of MIin VOC and steady state was 40.8% and 20.8% respectively. The prevalence of MI using both cTnT and ECG in children with SCA in VOC and steady state was 38.4% and 20%, respectively. Increasing age, lower hematocrit, elevated white blood cells and platelet count and were significantly associated with myocardial ischemia in participants with SCA.

Conclusion: The study affirms that MI occurs in children with SCA during VOC and in steady state. The prevalence of MI is higher during VOC using either or combined cTnT and ECG. Olderage, low PCV, increased white cell counts and platelet counts are associated risk factors for MI.

Audience Take Away Notes

- Knowing the burden and associated risk factors of Myocardial Ischemia/Injury among children and adolescents living with Sickle cell Anemia using cardiac troponin T and electrocardiography in accordance with the WHO and European Society of Cardiology recommendations
- The outcome will help educate the audience on the need for Routine evaluation of cardiac function using ECG or cTnT levels to promptly diagnose and avert associated short or long-term cardiovascular injury or end-organ damage with detrimental health outcomes

Biography

Dr. Salako Abideen studied Medicine and Surgery at the Ladoke Akintola University of Technology, Oyo Nigeria. He then proceeded to residency training in Paediatrics and Child Health at the Lagos University Teaching Hospital, Lagos Nigeria where he bagged the Fellow of the West African College of Physicians (WACP)(Paediatrics). He had a one-year fellowship in Paediatric Hematology and Oncology at the Tata Medical Centre in Kolkata India (2015-2016). Dr Salako is currently a research fellow/consultant Pediatrician at the foremost research institute; the Nigerian Institute of Medical Research. He has published more than 20 research articles in peer-reviewed journals.

magnus Group

27-28 APRIL

DAY 02

POSTERS

INTERNATIONAL SUMMIT ON

HEMATOLOGY AND BLOOD DISORDERS

Madeeha Subhan Waleed[1*], Waleed Sadiq[2], Michel Chalhoub[3]

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Moya moya and sickle cell disease; An amalgamation

Moya moya disease is a chronic cerebral vasculopathy first described in 1957. The disease is named after the appearance of collateral blood vessels that form following the gradual occlusion of arteries of the circle of Willis. The term Moya Moya Disease (MMD) is used for the disease without any predisposing condition, whereas Moya Moya Syndrome (MMS) is MMD with a predisposing condition such as Sickle Cells Disease (SCD) or systemic lupus erythematosus. The incidence of this disease is limited and the association with sickle cell disease is fairly uncommon.

We describe a case of a 35-year-old male with a history of sickle cell anemia who presented to the emergency department with right hand and forearm pain for one day. Moreover, he endorsed chest pain which was dull, non-radiating, and not associated with exertion. The patient reported that the pain felt consistent with the sickle cell pain that he always had. He took oxycodone for pain relief before arrival. In the ED, the patient was febrile, and tachycardiac and was de-saturating to 85% on room air. He was diagnosed with acute chest syndrome and sickle cell crisis. Over the course of the hospital stay, he received multiple exchange transfusions. His condition was complicated by seizures and anti-epileptics were started. Further workup was consistent with the internal carotid artery, posterior communicating artery stenosis/occlusion, acute on chronic infarcts in the posterior left parietal lobe, and left the occipital subependymal region with petechial hemorrhage, suspicious for Moya-Moya disease. An angiogram was performed and it confirmed MMS. The patient was taken for left craniotomy for direct STA-MCA bypass. A repeat CT head showed post-surgical changes post left temporal burr hole and left temporal artery bypass, improving pneumocephalus and subdural hyperdense fluid, but no new intracranial hemorrhage, mass effect, or midline shift.

Sickle cell disease has multiorgan involvement. However cardiopulmonary, and cerebrovascular complications have increased morbidity and mortality and the presentation can be variable. The imaging characteristics of MMS in SCD are not well described in the literature. Despite multiple trials, the management of SCD is still evolving. Further research is needed to determine the best treatment for cerebrovascular disease in Moya moya complicated by SCD.

Audience Take Away Notes

- Sickle cell disease has multiorgan involvement. However, cardiopulmonary and cerebrovascular complications are understudied. We provide a case with literature review of the condition
- Moya moya syndrome has also been the culprit for recurrent strokes in non–sickle cell patients. However, it is still not certain that there is an increased risk of cerebral infarcts and strokes in the Moya moya pattern with concomitant sickle cell anemia. This research on a rare presentation of the disease is to make physicians more aware of the disease presentation and complications so that they can diagnose and treat it in time
- This research is to create more awareness amongst physicians and other individuals to keep the neurological manifestations in mind while encountering patients with SCD and Moya moya syndrome

- Patients with Moya moya collaterals are more prone to developing strokes and TIAS as compared to patients without these collaterals. Despite multiple trials, the management of SCD is still evolving. Further research is needed to determine the best treatment for cerebrovascular disease in Moya moya complicated by SCD. And this case will bring attention to this topic and create awareness so that more trials and research is done to find the potential cure for this disease

Biography

Dr. Madeeha Subhan Waleed is a Resident physician at Lower Bucks Hospital Pennsylvania. She is an active researcher and she has published more than 53 research articles and 29 citations.

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COVID-19-induced cold agglutinin disease

Introduction: Coronavirus disease 2019 also known as COVID-19 is caused by SARS-CoV-2 virus. The disease's symptoms range from asymptomatic to inflammatory cytokine form involving multiple organs. Hematological complications of COVID-19 include cytopenia, coagulation abnormalities, thrombosis, and embolic events. Cold agglutinin is antibodies to the red blood cells antigen that leads to hemolysis via complement fixation when the temperature drops below normal physiological temperature. We report a case of COVID-19-induced cold agglutinin disease in a patient.

Methods: A 96-year-old female with a past medical history of coronary artery disease with multiple stents, hypertension, and chronic back pain presented to the emergency department with a chief complaint of shortness of breath for a day. She tested positive for Covid-19 infection via rapid test at home and was diagnosed with COVID-19 after getting a PCR in the hospital. She was given steroids in the emergency department and oxygen supplementation via nasal cannula. Her hemoglobin became low during her hospital stay. Her peripheral blood smear showed cold agglutinin. One unit of warm blood was transfused and her hemoglobin improved post-transfusion. After excluding all the causes of cold agglutinin disease, she was diagnosed with COVID-induced cold agglutinin disease.

Results: Cold Agglutinin Syndrome (CAS) occurs due to an autoimmune disorder, or infection such as mycoplasma, EBV, or lymphoid malignancy. Our patient did not have any risk factors for cold agglutinin disease except for a COVID-19 infection.

Lymphoid malignancies have immunoglobulin that is monoclonal while polyclonal immunoglobulin is prominent during infection. Our patient had polyclonal immunoglobulins. Glucocorticoids such as dexamethasone are used to decrease mortality in COVID-19 patients on respiratory support. However, glucocorticoids are not effective in cold agglutinin syndrome.

Audience Take Away Notes

- COVID-19-induced cold agglutinin syndrome is fairly uncommon. However, physicians should be aware of the disease-related complications and any sudden decrease in the hemoglobin levels in patients with Covid 19 should warrant checking for cold agglutinin syndrome
- Various treatment modalities for this complication should be explored as such a complication can increase the morbidity and mortality associated with the disease. Association between COVID-19 and cold agglutinin syndrome is a novel finding and warrants further research in this field

Biography

Dr. Madeeha Subhan Waleed is a Resident physician at Lower Bucks Hospital Pennsylvania. She is an active researcher and she has published more than 53 research articles and 29 citations.

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Mystery of the red puffy man

Coronavirus disease 2019 (COVID-19) has shown high incidences of thrombosis, especially pulmonary embolism. Superior Vena Cava Syndrome (SVCS) can be caused by external compression by tumors or intrinsic thrombosis. Here, we report a rare case of SVC thrombosis with a history of COVID-19 four months prior to presentation.

A 64-year-old male with a history of former smoking and hypertension presented with bilateral Upper Extremity (UE) swelling, facial plethora and dyspnea of 1-week duration. He had not had a Primary Care visit in the last 15 years and didn't have medical insurance. CT chest with contrast showed findings of SVC thrombosis extending up to the junction of the azygous vein and back into the subclavian vein. There was no evidence of intrathoracic mass/ lymphadenopathy compressing the vessel with collateralization below the diaphragm and opacification of the inferior vena cava suggesting venous return being completely below the diaphragm. CT abdomen and pelvis with contrast showed no abnormal masses or lymphadenopathy in the abdomen or pelvis.

He denied testosterone therapy, no family history of thromboses. He was vaccinated with 2 doses of Pfizer for COVID-19 and 1 booster dose. He underwent a venogram with balloon angioplasty and Suction Thrombectomy Of The SVC. His hypercoagulable work-up for JAK2 V617F point mutation for myeloproliferative disorders, factor V Leiden mutation, antiphospholipid syndrome, and prothrombin G20210A mutation were negative. He had normal protein S and protein C levels. He underwent a Lower Extremity (LE) venous duplex study that showed no evidence of Deep Vein Thrombosis (DVT). Given that the patient had no medical insurance, he was discharged on Coumadin with an international normalized ratio (INR) goal of 2–3 as he couldn't afford direct-acting oral anticoagulants. His subsequent follow-up DVT study, 6 months postoperatively, showed no evidence of DVT involving UE. He was scheduled for an outpatient chest CT venogram that was canceled by the patient owing to a lack of medical insurance.

Postoperatively 6 months later, he presented with left-sided neck swelling with palpable cervical lymph node and underwent CT neck with contrast that showed an enlarged 1.5 cm left supraclavicular lymph node. Ultrasound-guided core needle biopsy showed lymph nodal tissue involvement by the Vascular Transformation Of Sinuses (VTS) and Small Lymphocytic Lymphoma (SLL) /Chronic Lymphocytic Leukemia (CLL). VTS is an incidental finding with efferent lymphatic and venous obstruction by thrombus. Flow cytometry showed 23% of monoclonal lambda B-cell population expressing CD5 and CD23, moderate CD20 and dim CD11c expression, and CD38 undetected with no evidence of lymphocytosis/ anemia/ thrombocytopenia/ splenomegaly consistent with stage 0/low-risk disease. Hence, he did not meet the treatment criteria for CLL/SLL. It was deemed unlikely for a supraclavicular lymph node of 1.5 cm in diameter to be contributory to his history of SVC thrombosis with no evidence of lymphadenopathy seen on prior radiographic work-up at the time of presentation for SVC thrombosis making COVID-19 induced hypercoagulability as the pathophysiology behind his SVC thrombosis.

Audience Take Away Notes

- Case report highlighting high risk of SVC syndrome from COVID-19 related hypercoagulability
- Reflect upon the essence of anticoagulation in COVID-19 patients depending upon disease severity keeping in light the risk of bleeding
- Importance of hypercoagulability and malignant work-up to rule out any underlying hypercoagulable state irrespective of age at presentation
- Importance of having a Primary Care Provider and dedicated regular follow-ups with age-appropriate preventive screenings

Biography

Dr. Dandwani did her medical school from Terna Medical College, India. She aspires to be a future hematologist and oncologist. She is currently pursuing her internal medicine residency at Danbury Hospital, CT, U.S.A. She believes that every Complete Blood Count with differential is a reflection of magic numbers with a powerful descriptive tale of a patient's underlying diagnoses. Her hobbies are making soaps, and candles, doing yoga, and various dance forms like break-dance and hip-hop.

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Discrepancies of prothrombin time with low FVII activity could be a rare case of factor VII Padua

Introduction/Background: Any discrepancies of Factor VII (FVII) activity levels using different thromboplastin in a prolonged Prothrombin Time (PT), suspect FVII Padua. This case presented with PT discrepancies using different thromboplastins, FVII Padua is highly suspected.

Methods: This is a case report of a 2-year-old male with a history of recurrent tonsillitis who presents for tonsillectomy. There is no known history of bleeding. Workups revealed prolonged PT and eventually referred for Hematology evaluation. PMH, family, and environmental history were unremarkable. Normal physical exam except for tonsillar enlargement. Other labs were all normal.

Results: There were six different time points of testing for PT in four laboratories using either human recombinant or rabbit cerebral thromboplastin. There is an intermediate prolongation of PT using human recombinant while marked PT prolongation with a low level of FVII activity (7%) using a rabbit cerebral thromboplastin.

Discussion: FVII deficiency is a hereditary autosomal recessive disease and on rare occasions, it is acquired. Acquired FVII deficiency is common in tumors, antiphospholipid antibodies, sepsis, aplastic anemia, and hematopoietic stem cell transplantation. Congenital FVII deficiency has two forms: type I and type II. Type I is deficient in FVII activity and antigen. Type II always has low FVII activity, and FVII antigen is normal or reduced. FVII Padua defect ARG304Gln mutation in exon8. FVII Padua revealed very-low results of FVII (4-10% of normal) using rabbit brain thromboplastin, whereas thromboplastin of human origin like placenta or recombinant human thromboplastin has low intermediate levels of FVII (30-40% of normal), and a normal level of FVII (105% of normal) when using ox-brain thromboplastin. FVII antigens are always normal. Girolami, et al (2011) explained that using thromboplastin from the ox-brain is very sensitive to activated FVII could be due to abnormally high circulating levels of activated FVII in FVII Padua. Increased levels of activated FVII in FVII Padua were postulated to be associated with an increased risk for thrombosis.

Conclusion: It is essential to repeat testing of PT and Factor VII assay using a different thromboplastin in a prolonged PT with a low FVII activity. Asymptomatic patients with discrepancies in PT and FVII, highly consider FVII Padua before any Factor VII replacement therapy.

Audience Take Away Notes

- To recognize this rare case of FVII Padua in clinical practice
- To understand the different PT/FVII levels using different coagulation thromboplastin reagents
- To be aware of the risk if FVII Padua when treated with factor VII

Biography

Francis Torres is graduate of MD at Angeles University Foundation School of Medicine, Angeles City Philippines and Post-Graduate Internship at University of the Philippines – Philippines General Hospital in the Philippines. He finished MPH-Epidemiology at University of Texas Scholl of Public Health. Currently, he is a student at Harvard Medical School, Boston Massachusetts for Effective Scientific Writing for Health Care Class of 2023. He has been involved in basic research about vascular regeneration, inflammation, and chemokines and was able to publish an articles, poster presentations and abstracts. He served as a Judge in Translational Medical Sciences, Medicine & Health, Regional Science and Engineering in Texas Science and Engineering Fair Research Contest in San Antonio Texas.

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Hyperviscosity syndrome induced bilateral visual and auditory impairment in CXCR4-mutant waldenstrom macroglobulinemia

Hyper Viscosity Syndrome (HVS) is an emergent complication of Waldenstrom's Macroglobulinemia (WM) characterized by neurological, visual, and auditory impairment. Only few cases of HVS with bilateral visual and auditory impairment have been reported in the literature. We report a 69-year-old female with bilateral visual deficits followed by acute bilateral hearing loss, vertigo, lethargy, and ataxic gait. Visual impairment was secondary to retinal vein occlusion associated with diffuse retinal hemorrhages and macular edema as shown by fundus examination. Auditory and vestibular manifestations were secondary to bleeding in the inner ears as indicated by MRI scan. Diagnostic workup including bone marrow biopsy, monoclonal studies, immunoglobulin levels and genomic profiling led to the diagnosis with MYD88-mutant and CXCR4-mutant WM with IgM level of 4770mg/dL. The patient improved dramatically with plasmapheresis. However, she required three sessions of plasmapheresis as WM was resistant to treatment with Bendamustine + Rituximab (BR) and Rituximab + Velcade + Dexamethasone (RVD). Due to bleeding in lower gastrointestinal tract, inner ears, and retina on initial presentation, Bruton's Tyrosine Kinase Inhibitors (BTKIs) were not used. She was initiated on Zanubrutinib when GI bleed subsided resulting in Very Good Partial Response (VGPR) of WM. She also received intraocular treatment with bevacizumab. Although her vision and hearing recovered only partially, she regained significant functionality with the partial vision and use of hearing aid. Management of HVS associated with therapy-resistant WM can be quite complicated. In these cases, aggressive plasmapheresis is required initially to relieve the symptoms and help stop the bleeding so that BTKIs can be initiated. Genomic profiling is helpful as CXCR4 mutation has been associated with treatment resistance like in our case.

Audience Take Away Notes

- Bilateral visual and auditory impairment in HVS associated with CXCR4-mutant therapy-resistant WM
- Aggressive plasmapheresis may be required to manage HVS associated with therapy-resistant WM
- Genomic profiling should be performed to guide therapeutic strategy

Biography

Marie Plante M.D. B.S.N. R.N. graduated with a Bachelor's degree in Nursing Science from the University of South Carolina in Columbia, SC. She worked briefly as registered nurse in an outpatient Hematology and Oncology office at Lexington Medical Center. She then went on to earn her medical degree at the University Of South Carolina School Of Medicine in Columbia, SC graduating with honors and amongst the top in her class. She is currently in her second year of residency training in Internal Medicine at Mayo Clinic in Jacksonville, FL and is pursuing a fellowship in Hematology and Oncology.

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Pre-Hypertension in Sickle Cell Disease (SCD) as a risk factor for emergency department visits and hospitalizations

Introduction: While new approaches in treatment have improved diagnosis and management of Sickle Cell Disease (SCD) over the last few decades, many patients still have severe complications leading to repeat ED visits and hospitalizations. Better risk stratification can help to reduce health care resource utilization included ambulatory, Emergency Department (ED), and inpatient hospitalizations. Individuals with prehypertension (blood pressure, 120– 139/80–89 mmHg) and hypertension (blood pressure ≥140/90) have higher rates of left ventricular hypertrophy than normotensive individuals of the same age. Multiple studies have demonstrated increased rates of cardiovascular disease and mortality in young people with hypertension. We explored the role of pre-hypertension in African American Hgb SS sickle cell patients in order to risk stratify Sickle Cell Disease (SCD) and its impact on ED visits and hospitalizations.

Methods: This retrospective review included 100 African American hgb SS Sickle Cell Patients with SCD from 2021-2022 at a single urban, US-based safety-net medical center. Information extracted included demographics age, sex, BMI, baseline hemoglobin, baseline blood pressure, SCD characteristics, and number of ED visits and admissions within the past 12 months. 25 patients were excluded from the final analysis for other hemoglobinopathies. Deidentified data was compiled in a descriptive table to determine whether blood pressure affected the hospital visits/admissions. Patients with Hgb > 10 and BP <120/80 served as the controls from which Relative Risk (RR) of ED visits/hospital admissions was compared with to determine the risk that systolic, diastolic and pre-hypertension BP as a whole played in the risk of ED visits/ hospital admissions.

Results: Our cohort included 75 African American patients with Hb SS genotype, 100% publically insured, average age of 35 (range 17-74), with 39 Females, and 36 Males, with an average BMI of 25, average baseline hemoglobin of 9.17. The average # of ED visits/ hospital admissions was 4.86 within the past 12 months. Severity of anemia was the largest risk factor for admissions with hgb <10 leading to 5.86 admissions vs 2.42 for hgb >10. Within the cohort of patients with hgb >10, normotensive patients had 1.16 admissions/ year. Prehypertensive patients (BP > 120/80) had 9.75 admissions/year. For patients with HTN, there were 14.75 admissions. For elevated systolic > 120 OR elevated diastolic > 80, the relative risk (RR) for hospital admissions ranges from 2.4 -7.9 based on the hemoglobin. For, prehypertensive patients, the relative risk (RR) for hospital admissions is as high as 8.4 for anemic patients. Hypertensive patients with hgb < 10, have the highest RR of 12.7.

Conclusions: Patients with hgb < 10 had overall more hospital visits/admissions than those with hgb > 10. For both cohorts, the relative risks of hospital visits/admissions were higher for patients with elevated systolic, diastolic or pre-HTN consistently. Pre-HTN patients with hgb < 10 had an almost 10x relative risk of admissions compared to control group of normotensive patients with hgb > 10. Results are limited due to small sample size but consistently shows that pre-HTN in this overall young cohort of patients is a risk factor for ED visits and admissions.

Table 1: Relative risk of ED visits/hospital admissions in sickle cell disease patients with pre-hypertension

	Normal BP	RR	Systolic >120	RR	Diastolic >80	RR	Pre-HTN(BP>120/80)	RR	HTN	RR	Any BP	RR
Hgb > 10	1.16(8)	1.0	2.75(12)	2.4	3.8 (5)	3.3	4.25 (4)	3.7	4.25 (4)	3.7	2.42 (23)	2.1
Hgb < 10	4 (18)	3.4	7.13 (23)	6.1	9.22 (9)	7.9	9.75 (8)	8.4	14.75 (4)	12.7	5.86 (52)	5.1
Any Hgb	3.59 (26)	3.1	5.70 (35)	4.9	7.28 (14)	6.3	7.9 (12)	6.8	9.5 (8)	8.2	4.86 (75)	4.2

Audience Take Away Notes

- Pre-HTN SCD patients with hgb < 10 had an almost 10x relative risk compared to control group of normotensive patients with hgb > 10 of ED visits and hospital admissions
- Screening for pre-hypertension can alert physicians to patients who may be at higher risk for repeat admissions, either from pain perspective or disease control perspective
- Further research is warranted on identifying whether blood pressures are predictive risk factors for admission in SCD as adequate attention and treatment may reduce acute care utilization in this population

Biography

Dr. Ganguly studied Chemistry at the New York University, NY and graduated as BA in 2014. She then received her medical degree from Thomas Jefferson University, PA in 2018. She did her internal medicine residency at Northshore University Hospital, NY in 2021. She is currently a second year Cardiology Fellow at University of Florida-Jacksonville interested in Noninvasive Cardio-Oncology.

Silva Wellington Santos
Federal University of Bahia, Brazil

Resting blood BDNF in individuals with sickle cell disease and osteonecrosis

Introduction: Osteonecrosis is one of the most common musculoskeletal complications in sickle cell disease, which is a prevalent and particularly debilitating disorder in this population. Several studies have shown the relevance of brain-derived neurotropic factor (BDNF) as a biomarker in various diseases including sickle cell disease.

Objective: These studies aimed to measure of BDNF levels in individuals with sickle cell disease and osteonecrosis and compare them with healthy individuals.

Methods: This is an observational, cross-sectional study. The patient sample consisted of 18 individuals with sickle cell disease and osteonecrosis of the hip, and 8 individuals formed the control group. BDNF levels were determined by the ELISA technique. Statistical analyzes were performed using the SPSS program (version 25.0).

Results: The median and interquartile values of plasma BDNF levels in the control group were 302, 38 PG/mL (IQR = 253, 48 – 378, 82), while in the patient group it was 1.189,85 PG/mL (IQR = 652, 44 – 1.922, 86).

Conclusions: These altered levels of BDNF may be one of the main features for the maintenance of chronic pain in individuals with sickle cell disease and may help to understand the mechanisms underlying central sensitization, a maladaptive phenomenon in the brain that could possibly be present in this population.

Keywords: Osteonecrosis, Sickle Cell Diseases, BDNF, Chronic Pain.

Biography

Silva Wellington Santos did his Bachelor's degree in Biological Sciences (1991), Master's degree in Genetics and Evolution from the Federal University of Sao Carlos (1996). PhD in Molecular Pathology from the University of Brasilia (2007) and post-doctorate from the Postgraduate Program in Medicine and Health at the Federal University of Bahia (2016). He was a professor at Bahia Adventist College during the period 1999-2019 where he taught several subjects until he retired due to health problems. He was the creator of the Committee for Ethics and Research Involving Human Beings at Bahia Adventist College, of which he was coordinator for several years. His main line of research was Sickle Cell Diseases in Bahia, Brazil.

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How can beta-thalassemia affect the functional capacity and energy expenditure of the affected children and the degree of deviation from their normal peers

Background: Functional capacity is an individual's ability to perform daily activities related to the participation in the community. Beta-thalassemia is a blood disorder characterized by decreased production of hemoglobin which may in turn results in anemia in early age that affects the children abilities to perform activity.

Purpose: The aim of the current study was to detect how Beta- thalassemia major can affect the functional capacity and energy expenditure of the affected children and the degree of deviation from their normal peers.

Methods: Thirty-three children (5 girls and 8 boys) suffering from Beta-thalassemia major with age ranged from 6 to 12 years in addition to twenty volunteer normal age matched children (12 girls and 8 boys) participated in the current study. Participants underwent measuring functional capacity by 6 minutes' walk test and energy expenditure detected by energy expenditure index and comparison was made between the affected and normal children was made to detect how can Beta-thalassemia affect their functional performance.

Results: The results of the current study showed that there was a statistically significant decrease in the functional capacity and increase in the energy expenditure in children suffering from Beta-thalassemia when compared with their normal peers ($p > 0.05$).

Conclusion: Iron deposition due to repeated blood transfusions which affects different body organs as (heart, lungs) may play a central role in functional capacity differences between Beta-thalassemia major and their peers

Audience Take Away Notes

- This presentation will provide information about the difference in physical abilities of children with thalassemia
- Will concentrates about the physical therapy point of view and how to improve quality of life
- This study will help other specialties to expands their research and teach

Biography

Dr Esraa elsayed studied physical therapy at faculty of physical therapy Cairo university and graduated as MS in April 2019 and begun studying PHD in October 2019 at pediatric physical therapy department.

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Hematological and Hepatological findings and complications of HCV

Hepatitis is the inflammation, irritation or swelling of liver cells, caused by many biotic and abiotic factors. Hepatitis caused by Hepatitis C virus (HCV) is one of the most common bloodborne viral infections in the world and a leading cause of deaths infecting about 2.5 to 3% of the world's population. The current study was performed to investigate the effects of HCV infection on liver enzyme, serum Alanine Aminotransferase (ALT), also known as Serum Glutamic-Pyruvic Transaminase (SGPT) and haematological (blood) parameters in HCV infected patients in District Swat, Pakistan. Blood samples were taken from hospitalized patients who have been currently infected with HCV (anti- HCV positive individuals). Similarly, blood samples were collected from the group of individuals (as a control) who did not have/ had the previous/current clinical history for any infectious diseases (anti-HCV negative individuals). The mean and standard deviation values were calculated for the samples infected with HCV and for control samples and a comparison were made between the two groups. Paired t-test was used to find the significance of data. The analysis showed a significant increase in SGPT level and some of the haematological parameters in HCV infected patients. These changes can produce more severe complications in the form of liver cancer, may affect body immune responses, and leads to neutropenia, thrombocytopenia, and anemia. The platelets count significantly decreased in the HCV infected patients. This preliminary study would be helpful to determine the future risk of diseases in the studied population and may identify a new biomarker for easy and early detection of HCV infection.

Audience Take Away Notes

- Blood constituents (haematological) analysis is very much important for monitoring of infections or diseases in human body and is routinely used as an indicator for pathological and physiological changes in disease investigation
- The aim of this study was to assess the impact of HCV on HCC and hepatic decompensation
- This study may be helpful to identify a new biomarker for easy and early detection of HCV
- The study will also help to determine the future risks of HCV infections in the population

Biography

Dr. Asif Mahmood studied Microbiology at the University of Swat (Distinction), Pakistan, graduated in 2015. He then joined the research group of Prof. Zhang Wen at School of Medicine, Jiangsu University P.R China. He received his PhD in Clinical Laboratory Diagnostics Medicine at the same Institution in 2019. Currently he is working as a Postdoc Fellow at School of Material Science and Engineering, School of Medicine Jiangsu University Zhenjiang. His research is based on Viral Metagenomics and to explore new types of potentially pathogenic Viruses. He has published more than 10 research articles in SCI(E) journals.

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"We wish to meet you again at our upcoming events next year..."

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