ABSTRACTS

MENA ABSTRACTS

FREE PAPER SESSION

MENA-P-104 Thrombotic Microangiopathy in a Secondary Care Hospital

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Background:

Thrombotic microangiopathy or TMA is a life-threatening condition that results from micro-thrombosis & requires immediate treatment. It can be contributed by heterogeneous disorders that give overlapping pictures while the treatment approach is different , giving variable prognosis. Aim: Reviewing the major causes of TMA, summarize its clinical & laboratory characteristics & its prognosis to compare the behavior of our major TMA reason to those of other populations. Methodology: The study was approved by our research committee. TMA cases of three years, clinical presentation, mean of variables, median of CBC parameters, plasmic score, and prognosis were reviewed retrospectively. We included TMA in both genders, all age groups. TMA with systemic fat embolization due to hemoglobinopathies and with blood incompatibility were excluded. Results : We got nine cases with male, adults' predominance, mean age 32 years. The mean laboratory results were: Hb 7.64 g/dL, platelets 49 x103/uL, reticulocytes 5.2%, schistocytes 7.94%, LDH 728.78 IU/L.

MENA-P-105 Hemolytic Disease Of The Newborn and Neonatal Transfusion

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Hemolytic Disease of the Newborn (HDN) is a serious immunohematologic condition caused by maternal alloantibodies that cross the placenta and destroy fetal red blood cells, most commonly due to Rh incompatibility. Advances in immunoprophylaxis and prenatal care have significantly reduced the incidence of Rh-mediated HDN, yet cases due to other alloantibodies (e.g., Kell, Duffy) continue to present challenges in neonatal care.

Objective:

This study aims to review the pathophysiology, diagnostic approaches, and management of HDN, with a focus on the role of neonatal transfusion in preventing and treating anemia and hyperbilirubinemia in affected newborns.

Methods:

A retrospective review of clinical cases from 2015 to 2024 was conducted at a tertiary care center. Data included maternal antibody screening, fetal monitoring outcomes, transfusion interventions, and neonatal morbidity rates. Literature from PubMed and WHO databases was also reviewed.

Results:

Out of 72 HDN cases identified, 25% required intrauterine transfusion, and 40% underwent exchange transfusion postnatally. The use of antigen-negative, irradiated, and leukoreduced red blood cells was associated with reduced incidence of transfusion reactions. Early identification and aggressive phototherapy reduced the need for invasive transfusion in mild to moderate cases.

Conclusion:

Neonatal transfusion remains a critical component in the management of HDN, especially in severe cases with anemia and hyperbilirubinemia. Continued emphasis on antenatal antibody screening and appropriate blood product selection is essential for optimizing neonatal outcomes.

MENA-P-107 Multiple myeloma

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Multiple Myeloma (MM) is a clonal plasma cell malignancy characterized by excessive production of monoclonal immunoglobulins and infiltration of the bone marrow. It accounts for approximately 10% of hematologic cancers and presents with bone pain, anemia, renal impairment, and hypercalcemia. Despite therapeutic advances, MM remains incurable, with inevitable relapse in most patients.

Objective:

This study aims to evaluate the current diagnostic tools, therapeutic approaches, and emerging challenges in the clinical management of multiple myeloma, with a focus on personalized treatment strategies and outcomes.

Methods:

A retrospective review was conducted on 120 patients diagnosed with MM

between 2018 and 2024 at a tertiary care center. Data analyzed included clinical presentation, laboratory findings, treatment regimens, response rates, and progression-free survival (PFS). Diagnostic strategies, including serum free light chain assay, bone marrow biopsy, and imaging studies, were assessed for diagnostic accuracy.

Results:

Initial diagnosis was most commonly prompted by anemia (65%) and bone pain (55%). First-line therapy included bortezomib-based regimens in 78% of patients, with an overall response rate of 82%. Autologous stem cell transplantation was performed in 36% of eligible patients. Median PFS was 28 months. Relapse occurred in 48% of patients during the follow-up period, with resistance noted in those with high-risk cytogenetics.

Conclusion:

Multiple myeloma remains a complex and evolving disease. While novel therapies have improved response rates and survival, relapse and resistance continue to challenge long-term management. Tailored treatment approaches and incorporation of next-generation therapies are essential to improve outcomes.

MENA-P-109 Diffuse Large B-Cell Lymphoma Development Post-COVID-19 Vaccination in a Sickle Cell Patient: A Complex Clinical Scenario

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Background:

Unlike the general population, sickle cell disease (SCD) patients have a 2- to 11-fold higher risk of hematological malignancies including lymphoma.

Case presentation: In the era of coronavirus disease 2019 (COIVD-19), a 26-year-old non-smoker overweight male diagnosed as SS genotype SCD with hyperuricemia and iron overload, presented with cervical, axillary lymphadenopathy and lower neck mass with compressive chest symptoms approximately six weeks after encountering COIVD-19 infection that was preceded by receiving a single dose of BNT162b2, COVID-19 mRNA vaccine. A cervical lymph node True-cut biopsy with immunohistochemistry revealed diffuse large B-cell lymphoma (DLBCL); germinal center B-cell (GCB-subtype). Pan-CT scan and BMB revealed DLBCL (Stage IIx) with a good R-IPI.

Management: The patient was initially managed by blood transfusion, IV methylprednisolone as a pre-phase, followed by six cycles of R-CHOP-21 without administration of granulocyte colony-stimulating factor (G-CSF) to avoid precipitation of sickle cell crisis. During immunochemotherapy hydroxyurea was held to avoid cytopenias and top-up blood transfusion was used as an alternative management for SCD whenever indicated. Outcome: The patient is still on follow-up after three years of his last chemotherapy, with good health condition and persistent complete remission, as confirmed by PET/CT restaging at the end of successful treatment despite the diagnostic and therapeutic challenges due to the overlapping initial findings and lack of hydroxyurea or G-CSF administration throughout immunochemotherapy. Interestingly, vaso-occlusive crisis (VOCs) did not occur during R-CHOP. However, upon follow up in the last three years, he had recurrent hospitalizations due to acute chest syndrome, and painful VOCs.

Discussion:

In hemoglobinopathies, multiple blood transfusions increase the risk of alloimmunization and exposure to blood-borne viruses with increased risk for malignancy. Moreover, iron overload represents a chronic proinflammatory state that leads to iron-induced carcinogenesis. Also, baseline hyperuricemia was reported to be an early feature of undiagnosed hematological malignancy. Post-COVID vaccine DLBCL including (GCB subtype) was reported in three patients, even after a single dose of BNT162b2-vaccine. Also, 1ry lymphomas was reported after SARSCoV-2 (a potentially oncogenic virus).

Conclusion:

To the best of our knowledge, we are the first to report DLBCL/GCB in young adult male with SCD that developed after BNT162b2 vaccination and COVID-19 infection. This sequence of events raises questions about a potential causal relationship. However, the simple association is still a possible scenario. Thus, further research using molecular profiling for SARS-CoV-2 spike protein and nucleocapsid protein, will be helpful in discrimination.

MENA-P-114 Epidemiology of Vascular Thrombosis in the Eastern Province of Saudi Arabia: A Single Center Study and Comparison with National Data

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Background:

Despite the growing evidence on the thrombophilia in Saudi population along its diverse regions, there have been no studies on thrombotic events in the Eastern Province of Saudi Arabia. This single-center study aimed to investigate the prevalence of venous thromboembolism (VTE) in a hematology clinic in the Eastern Province of Saudi Arabia between January 2015 and May 2023. The objective of this study was to investigate the clinical characteristics of VTE and compare them with national data.

Methods:

This is a retrospective, observational, single-center study conducted in the Eastern Province from January 2015 to May 2023. After applying the inclusion and exclusion criteria and the prevalence rate calculation an analysis of n=170 patients was conducted to compare the epidemiological results of the current study with national data published in other provinces of Saudi Arabia. Data collected included demographics, comorbidities and location with thrombosis recurrence.

Result:

The prevalence rate of VTE in this cohort was 3.16%. Women made up 70% of the population. About 80.5% of cases were obese or overweight, 37.6% of cases had comorbidities that may increase the risk of thrombosis, and 12.9% of cases were associated with smoking. The most common site of VTE (56.5%) and the site of higher recurrence of VTE (21.8%) was the lower extremities. In addition, recurrent VTE was observed in 28.2% of cases, reflecting a significantly higher recurrence rate compared with other national studies (p=0.001). Compared with other national statistics, the most significant risk factors for thrombosis in the Eastern Province were smoking, obesity and family history (p=0.000). Compared with national statistics, this study demonstrated significantly higher rates of VTE in pregnancy, patients on hormonal therapy, and patients with rheumatological/autoimmune diseases (p=0.001).

Conclusion:

The incidence of VTE can be reduced by changing lifestyles and creating educational programs to educate people about the dangers of obesity and smoking.

MENA-P-119 Estimation of some Haematological and Coagulation Parameters among Sudanese Patients with Multiple Myeloma .

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Background

Multiple myeloma (MM) is a neoplastic plasma cell disorder characterized by the clonal proliferation of plasma cells in the bone marrow and presence of monoclonal protein in the blood or urine This study was aimed to estimate some of hematological and coagulation parameters among Sudanese patients with Multiple myeloma

Material and method

This case-control hospital-based study was conducted at the Future Hospital at Khartoum State from January 2023 to May 2023. All patients attending the hospital and diagnosed with multiple myeloma during the aforementioned period were included as a case group, apparently, healthy participants with no history of thrombi or bleeding were selected as a control group. CBC was done by using Sysmex Automated Hematology Analyzer KX 21N SN B 2010). PT, APTT, and Fibrinogen level was measured by the coagulometer device

Results:

The means of WBC, RBC, Hb, platelets, PT, APTT, and fibrinogen levels were (6.5±2.9), (11.0±2.2), (229.4±106.6), (11.2±2), (30.1±7), (237.3±76.1) respectively. However, the means of WBC, RBC (4.5±0.6), Hb, platelets, PT, APTT, and fibrinogen levels in the control group were (6.5±1.6), (13.10±1.4), (291.4±70.3), (11.6±1), (29.7±3.8), (242.2±49.1) also respectively. comparison of parameters means between the case and control revealed that; there was a significant decrease in the RBC, platelets count, and the Hb (P value0.001), while there were insignificant differences in the WBCs, PT, APTT, and fibrinogen levels (P value >0.05). when comparing these parameters with gender there was significant differences in the WBCs and the platelets, (P value0.000), also when compared with the other chronic disease there as significant differences only in the WBCs, (P value0.000), for the correlation test, there was a negative correlation between age Hb, and fibrinogen levels.

conclusion

In the Sudanese patients with multiple myeloma, there was a significant decrease in the RBC, platelets count, Hb, and there were insignificant differences in the WBCs, PT, APTT, and fibrinogen levels.

MENA-P-122 Netrin-1 and Clusterin: Valuable Markers for Early Detection of Kidney Injury in Children with Transfusion-Dependent Thalassemia

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Background:

Advances in the management of transfusion-dependent thalassemia (TDT) have led to improved patient outcomes but also revealed new complications, including renal abnormalities. Clinical studies have reported mild tubular dysfunction and altered glomerular filtration rate (GFR) in children with TDT. Additionally, progressive increases in serum creatinine have been observed following exposure to certain iron chelators.

Aim: To detect early renal tubular dysfunction as a complication of transfusion-dependent thalassemia.

Methods:

A total of 100 children were enrolled in this study: 50 with TDT and 50 age- and gender-matched healthy controls. All participants underwent thorough medical history-taking, clinical examination, and laboratory investigations including complete blood count, serum creatinine, blood urea, serum ferritin, urinary creatinine, urinary albumin, and measurement of serum Netrin-1 (NTN-1) and Clusterin (CLU) levels.

Results: Serum Netrin-1 levels were significantly elevated in TDT patients compared to controls (68.6 ± 28 pg/ml vs. 14.3 ± 2.5 pg/ ml; $p < 0.001$), demonstrating 98.00% sensitivity and 84.00% specificity for detecting renal injury. Similarly, serum Clusterin levels were significantly higher in TDT patients (101.94 ± 37 ng/ml) than in controls (16.58 ± 6.7 ng/ml; $p < 0.001$), with 88.00% sensitivity and 86.00% specificity. Notably, all participants had normal serum creatinine, urea, uric acid, and urine albumin-creatinine ratios.

Conclusion: Serum Netrin-1 and Clusterin are promising early biomarkers for renal tubular injury in children with transfusion-dependent thalassemia, even before conventional kidney function tests show abnormalities.

Keywords:

Netrin-1, Clusterin, Kidney Injury, Transfusion-Dependent Thalassemia, Early Biomarkers

MENA-P-129 Neutrophil CD64: early predictor for sepsis in cancer patients during febrile neutropenia

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Background:

Febrile neutropenia (FN) is a common treatment-related complication in pediatric cancer patients with substantial morbidities and mortalities. Previous studies reported that neutrophil CD64 (n CD64) had higher diagnostic accuracy for infection with high sensitivity and specificity in neonates, pediatrics and adult patients.

Aim: to evaluate the usefulness of neutrophil CD64 expression as an early diagnostic marker of sepsis in children with cancer during episodes of FN. Methods: a case control study was conducted on 100 children (50 patients with hematological malignancies and febrile neutropenia, 25 patients with hematological malignancies without febrile neutropenia and 25 apparently healthy children as a control group). Routine laboratory investigations including blood culture were done in patients with cancer according to our local standards. Procalcitonin level and Neutrophil CD64 expression by flow cytometry were measured for all study participants.

Results:

n CD64 expression was significantly higher in patients with cancer and FN compared to other groups ($p > 0.001$). At a cutoff value of ≥ 17.82%, serum n CD64 had 94% sensitivity and 72% specificity. n CD64 expression level was negatively correlated to absolute neutrophil count (ANC) during episode of FN ($r = (-0.359$, $p = 0.01$). A positive correlation was found between nCD64 expression and both of CRP and procalcitonin. Blood culture was positive in 54% in patients with cancer and FN. The most common isolated organism was Klebsiella pneumonia. Among patients with cancer and FN, n CD64 expression level was significantly higher in patients with positive blood culture compared to those with negative cultures.

Conclusion:

Neutrophil CD64 expression seems to be a reliable marker in early detection of sepsis during episodes of febrile neutropenia in children with haematological

malignancies.

Keywords: Febrile neutropenia, Neutrophil CD64, Cancer, Sepsis

MENA-P-133 Assessment of Audiometric Abnormalities in Children with Gaucher Disease

Marwa Zakria , Nehad Karam

Neutrophil CD64: early predictor for sepsis in cancer patients during febrile neutropenia

Background: Febrile neutropenia (FN) is a common treatment-related complication in pediatric cancer patients with substantial morbidities and mortalities. Previous studies reported that neutrophil CD64 (n CD64) had higher diagnostic accuracy for infection with high sensitivity and specificity in neonates, pediatrics and adult patients.

Aim:

to evaluate the usefulness of neutrophil CD64 expression as an early diagnostic marker of sepsis in children with cancer during episodes of FN. Methods: a case control study was conducted on 100 children (50 patients with hematological malignancies and febrile neutropenia, 25 patients with hematological malignancies without febrile neutropenia and 25 apparently healthy children as a control group). Routine laboratory investigations including blood culture were done in patients with cancer according to our local standards. Procalcitonin level and Neutrophil CD64 expression by flow cytometry were measured for all study participants.

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Conclusion:

Neutrophil CD64 expression seems to be a reliable marker in early detection of sepsis during episodes of febrile neutropenia in children with haematological malignancies.

Keywords Febrile neutropenia, Neutrophil CD64, Cancer, Sepsis

MENA-P-138 Iron Deficiency Anaemia

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Title:

Awareness of Iron Deficiency Anaemia among school-aged children and adolescents in Madinah, KSA

Background and Aim

Iron deficiency anemia (IDA) is a common dietary condition that can cause serious medical conditions, especially in teenagers. It is crucial to understand the awareness levels surrounding this condition to implement effective educational and prevention strategies. This study aims to evaluate the awareness about IDA among students aged 9-18 years in Madina, focusing on their knowledge of its symptoms, causes, and preventive measures. The findings of this study can help to improve understanding, preventionand management of this condition within the community.

Method

In a cross-sectional study conducted among school aged students in Madinah we assessed awareness of IDA. A structured questionnaire collected data on demographics, dietary habits, physical activity, and IDA knowledge. Data is cleaned in Excel and analyzed via IBM SPSS 29.0.0.

Results

In this study (n=109), most participants were females (n=65, 59.6%), Saudis (n=93, 85.3%), and aged 13–18 years (n=64, 58.7%). IDA was reported in 73 participants (67.0%). High awareness of IDA was observed in 64.2% (n=70), while 35.8% (n=39) had low awareness. Awareness was significantly associated with age ($p<0.001$), gender (higher in females, n=53, 81.5%; $p<0.001$), nationality (non-Saudis n=14, 87.5%; p=0.035),BMI (normal n=38, 80.9%; obese n=4, 100.0%; $p<0.001$) and fast food intake frequency (n=20, 95.2%; p=0.002). However, income level (p=0.422), history of anemia(p=0.960), and chronic disease history (p=0.491) did not significantly impact awareness. Only 31.2% took iron supplements, and just 3.7% identified worm infections as a cause.

Conclusion

The current study revealed that there is relatively high awareness of IDA among adolescents in Madinah, especially among older females with normal or higher BMI. However, practical knowledge and preventive behaviors remain limited. Significant associations were found between awareness and age, gender, BMI, and fast-food habits, highlighting the need for targeted, behavior-focused educational interventions across schools and communities.

MENA-P-143 Frequency of Anemia and Possible Risk Factors Among Sudanese Children With End_ Stage of Renal Disease

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Anemia is a common Feature of chronic kidney disease, but the management of anemia in children is complex. Erythropoietin and Supplemental iron are used to maintain hemoglobin levels. The aim of This study to determine the Frequency of anemia and possible Risk Factors Among children with End stage renal disease.

Methods:

A total of 96 children, 61males (63.5%) and 35 Females (36.5%), were attended at hemodialysis units in Khartoum state were enrolled in the study and Frequency of anemia was estimated by analyzing CBC on blood counter (sysmex).The concentration of iron profile, C-reactive protein and parathyroid hormone was measured using COBAS INTEGRA 400 PLUS and COBAS E411.

Results

99% of children were anemic ,4.17% of the them were suffering from iron deficiency anemia and also there is other causes contributing to anemia in ESRD patients which are inflammation and hyperparathyroidism.

Conclusion

The prevalence of anemia in children on hemodialysis in Sudan appears to be higher than that reported in other studies in spite of extensive use of rHuEPO and iron supplementation .

MENA-P-148 Investigating Stroke Risk in Microcytic Hypochromic Anemia through the Role of Red Blood Cell Size and Aggregation

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Title:

Investigating Stroke Risk in Microcytic Hypochromic Anemia through the Role of Red Blood Cell Size and Aggregation

Background:

Microcytic hypochromic anemia is traditionally linked to reduced red blood cell (RBC) aggregation due to smaller cell size and lower hemoglobin. However, emerging data suggest plasma-phase factors may significantly influence aggregation, potentially increasing thrombotic risk. This study explores the paradox of enhanced RBC aggregation in such patients.

Aims:

To assess RBC aggregation behavior in microcytic hypochromic anemia and evaluate its relationship with RBC indices. The study also aims to determine whether increased aggregation may represent an underrecognized risk factor for thrombosis.

Methods:

A case-control study was conducted on 102 patients diagnosed with microcytic hypochromic anemia, compared to healthy controls. CBC parameters were measured, and RBC aggregation was analyzed using the Laser-Assisted Optical Rotational Cell Analyzer (LORRCA). Key parameters included Aggregation Index (AI%), kinetic indices (T1/2, T1/2 ER, TR, TR SD), and amplitude (AMP, AMP SD).

Results:

Despite significantly lower MCV, MCH, Hb, and HCT, the anemic group showed elevated AI% (74.9% vs. 67.1%). Kinetic parameters were prolonged, indicating delayed and disorganized aggregation. While AMP was slightly decreased, its variability (AMP SD) increased, suggesting inconsistent aggregate strength. RDW was also elevated, indicating anisocytosis. These findings suggest plasma components—rather than RBC morphology—may play a dominant role in aggregation behavior.

Conclusions:

This study challenges the conventional view that RBC aggregation is reduced in microcytic states. Instead, results reveal heightened aggregation likely mediated by plasma-phase factors such as fibrinogen. The use of LORRCA enabled detailed real-time analysis, supporting the presence of a hyperaggregable state in microcytic hypochromic anemia. These findings underscore the need to consider both cellular and plasma elements when assessing thrombotic risk in anemic patients. Future studies should investigate inflammatory markers and plasma protein levels to better understand the mechanisms behind this aggregation pattern.

MENA-P-152 Investigating the role of B-cell activating factor (BAFF) in multi-transfused children with thalassemia

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Background:

Frequent blood transfusions in thalassemia patients can lead to alloimmunization, with B-cell activating factor (BAFF) playing a crucial role in this process. We studied BAFF levels in pediatric thalassemia patients with multiple transfusions to understand its relationship with red blood cell alloimmunization.

Methods:

A total of 150 participants, including 100 thalassemia pediatric patients and 50 healthy children, were enrolled. Venous blood samples were drawn for CBC, blood grouping, and BAFF measurement via ELISA at baseline and 12 months later. Antibody screening and identification were conducted using column agglutination technology at both baseline and follow-up.

Results:

A significant positive correlation was observed between BAFF and the BAFF-to-ALC ratio at both time points. ALC was notably higher in splenectomized patients and those without baseline RBC antibodies. Furthermore, elevated BAFF and BAFF-to-ALC ratio were independently predictive of baseline RBC antibodies, while higher ALC levels were associated with a decreased risk of antibody development.

Conclusion:

Our study shows that BAFF levels are elevated in thalassemic patients, especially those with RBC alloantibodies, and increase over time. These findings indicate that BAFF may be a useful biomarker for predicting red blood cell alloantibody formation, with potential clinical benefits.

MENA-P-154 The Role of Radiotherapy in Improving Outcomes for Neuroblastoma Patients Undergoing Autologous Bone Marrow Transplantation

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Background:

Neuroblastoma remains a significant clinical challenge, particularly in high-risk cases. Bone marrow transplantation and radiotherapy are important treatment strategies, but their combined effect on prognosis and survival requires further study.

Aim:

This study aimed to examine the outcomes of neuroblastoma patients who underwent autologous bone marrow transplantation followed by radiotherapy.

Methods:

This study enrolled 31 pediatric neuroblastoma patients and assessed the impact of BMT and radiotherapy on treatment outcomes.

Results:

The male-to-female ratio was 2.1:1, and most patients were preschool-aged. Bone marrow metastasis occurred in 67.7% of cases. BMT was associated with improved outcomes, with a lower relapse rate (46.7%) compared to non-transplanted patients (87.5%). The difference in outcomes between the two groups was statistically significant (p=0.05). The addition of radiotherapy to BMT did not significantly impact outcomes in this study.

Conclusion:

Autologous bone marrow transplantation for high-risk neuroblastoma is associated with improved patient outcomes, including increased survival and reduced recurrence rates. In this context, radiotherapy does not seem to have a significant impact on patient prognosis or survival.

MENA-P-160 The Role of Radiotherapy in Improving Outcomes for Neuroblastoma Patients Undergoing Autologous Bone Marrow

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Background:

The goal of this study was to create and validate a Sanger sequencing-based assay using the SeqStudio Genetic Analyzer to detect mutations in the HFE gene, specifically p.C282Y, p.H63D, and p.Glu277Lys. These mutations are linked to hereditary hemochromatosis (HH), an autosomal recessive condition characterized by iron overload. Prior to in-house validation, the HFE gene mutation assay was sent to Bio Scientia (Germany) for qPCR analysis. While this method reliably detects common mutations, it frequently misses rare variant mutations, indicating the need for a more efficient and cost-effective method of detecting these mutations. The development of this assay provided a promising solution by reducing TAT from three weeks to six days, making it cost-effective, and allowing for novel mutation detection through broad

screening.

Methods:

Genomic DNA was extracted from peripheral blood. The HFE gene (NM_000410.4) was analyzed by PCR amplification of exons 2 and 4 using a VeritiPro™ Thermal Cycler (Applied Biosystems, USA). Sanger sequencing was performed using the BigDye™ Terminator v3.1 Cycle Sequencing Kit and sequenced in the SeqStudio Genetic Analyzer (Applied Biosystems, USA). The patient's sequence was compared to the reference HFE gene sequence.

Results:

134 patient samples were analyzed for three variants in the HFE gene: c.187C>G (p.His63Asp), c.845G>A (p.Cys282Tyr / C282Y), and c.829G>A (p.Glu277Lys) using Sanger sequencing. Out of 134 samples, 59 (44%) had one or more HFE gene mutations, while 75 (56%) tested negative for all HFE gene mutations.

The distribution of mutations among positive samples is shown below: c.187C>G (p.His63Asp) heterozygous 37 cases & homozygous 8 cases; C282Y heterozygous (c.845G>A): 1 case; C282Y homozygous: 1 case; c.829G>A (p.Glu277Lys) heterozygous 8 cases; while compound heterozygous [c.187C>G (p.His63Asp), c.845G>A (p.C282Y)] one case & (p.His63Asp-p.Glu277Lys) three cases.

The presence of homozygous C282Y—the most clinically significant genotype in hereditary hemochromatosis was uncommon in this cohort.

Conclusion:

The study developed and validated a Sanger sequencing-based assay to detect HH-associated HFE gene mutations (c.187C>G, c.845G>A, and c.829G>A). This study shows that Sanger sequencing is a reliable, cost-effective in-house method for mutation detection with a wider mutation detection capacity and faster turnaround time than outsourced qPCR testing.

Due to the rare p.C282Y mutation and common p.H63D mutation in Saudis, more research is needed. A larger sample size of clinically well-characterized Saudi patients with HH may reveal the role of p.H63D or novel HFE mutations.

MENA-P-164 Brain iron accumulation with neurodegeneration

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Title:

When Iron Turns Toxic: A Rare Case of Neuroferritinopathy Unmasked by Intravenous Iron Therapy

Abstract:

Neuroferritinopathy is a rare form of neurodegeneration with brain iron accumulation (NBIA), caused by mutations in the FTL gene. We present the case of a 35-year-old woman initially diagnosed with non-anemic iron deficiency syndrome (NAIDS), who developed acute neuropsychiatric symptoms following intravenous (IV) iron therapy. Magnetic resonance imaging (MRI) revealed iron deposition in basal ganglia and cerebellar nuclei, and genetic testing confirmed FTL mutation. This case underscores the importance of considering NBIA in patients with atypical neurological symptoms post iron infusion.

Keywords:

Neuroferritinopathy, NBIA, intravenous iron, iron overload, FTL gene, movement disorder

Background

Non-Anemic Iron Deficiency Syndrome (NAIDS) refers to a state of iron depletion with normal hemoglobin levels, often resulting in symptoms like fatigue, cognitive impairment, and dyspnea. While oral iron is first-line therapy, IV iron is used when intolerance occurs. However, IV iron can rarely lead to hypersensitivity reactions or worsen undiagnosed neurodegenerative conditions.

Case Presentation

A 35-year-old female presented with fatigue, poor concentration, dyspnea, and menstrual irregularities. Her only medical history was mild allergic rhinitis. Laboratory investigations revealed microcytosis (MCV 75 fL) and severe iron deficiency (serum ferritin 2.5 ng/mL) with a normal hemoglobin of 12.1 g/dL. She was diagnosed with NAIDS and prescribed oral iron, which she could not tolerate. She received two IV iron sucrose infusions (200 mg each).

Five days after the infusions, she developed diffuse myalgia, perioral numbness, tremors, and progressed to seizures, dystonia, and ataxia. Laboratory workup was unremarkable. Brain MRI showed hypointense signals on T2 and T2*-weighted imaging in the globus pallidus, substantia nigra, caudate, and cerebellar nuclei, consistent with iron deposition. Genetic testing revealed an FTL gene mutation, confirming neuroferritinopathy.

Discussion

Neuroferritinopathy is a rare autosomal dominant NBIA subtype marked by progressive movement disorders and cognitive decline. The FTL mutation causes aberrant iron storage and neuronal damage. Although IV iron is generally safe, this case suggests that iron infusion may trigger or exacerbate latent neurodegenerative processes in genetically predisposed individuals.

This case also illustrates the importance of considering NBIA in patients who develop new neurological symptoms after iron therapy, especially when imaging shows basal ganglia iron deposition.

Conclusion

In patients with unexplained extrapyramidal symptoms following IV iron therapy, clinicians should consider underlying NBIA, particularly neuroferritinopathy. Early recognition through neuroimaging and genetic testing can prevent misdiagnosis and guide future management.

publication Consent : obtained from patient

MENA-P-170 CLPB-Related 3-Methylglutaconic Aciduria Type VII : A Crucial Consideration In Severe Congenital Neutropenia with Epilepsy , Case Report

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Abstract

CLPB (caseinolytic peptidase B) deficiency is a rare mitochondrial disorder combining neurologic dysfunction and congenital neutropenia. We present a diagnostically challenging case of a 4-month-old girl initially labeled as hypoxic-ischemic encephalopathy (HIE), with seizures and persistent neutropenia. Whole exome sequencing revealed a homozygous pathogenic CLPB variant (c.1760A>G; p.Tyr587Cys), confirming 3-methylglutaconic aciduria type VII (MGCA7). This case emphasizes the importance of recognizing CLPB-related disorders in infants with overlapping neurologic and hematologic findings.

Introduction

CLPB deficiency is an autosomal recessive mitochondrial chaperonopathy affecting stress-induced protein disaggregation. It presents as a spectrum ranging from severe infantile encephalopathy with neutropenia to milder isolated neutropenia. Severe forms resemble HIE but involve congenital neutropenia, which may not respond fully to G-CSF therapy. Early recognition is essential for appropriate management and genetic counseling.

Case presentation

A 4-month-old Yemeni girl was referred for persistent neutropenia and developmental delay. Born at term following presumed perinatal asphyxia, she was initially diagnosed with HIE. Her clinical course was marked by intractable epilepsy, global developmental delay, hypotonia, left-sided hemiparesis, and oxygen dependency. MRI showed bilateral thalamic and basal ganglia hyperintensities, corpus callosum thinning, and cerebral atrophy. EEG demonstrated modified hypsarrhythmia.

Her ANC ranged from 0.03–0.16×10⁹/L, peaking transiently at 0.71×10⁹/L following G-CSF. Bone marrow was non-specific. Ferritin was 5266 , and EBV PCR was positive. Whole exome sequencing revealed a homozygous CLPB mutation (c.1760A>G; p.Tyr587Cys), consistent with MGCA7.

Conclusion

CLPB deficiency should be included in the differential diagnosis for infants with unexplained encephalopathy and neutropenia. Early genetic testing avoids misdiagnosis, facilitates proper counseling, and improves family planning options.

Discussion

This case represents a severe MGCA7 phenotype, reinforcing the link between CLPB mutations, neurologic dysfunction, and neutropenia. The c.1760A>G variant is documented as pathogenic. Incomplete response to G-CSF is consistent with published cases. CLPB testing is critical in infants with combined neurologic and hematologic findings to prevent delays in diagnosis and care.

MENA-P-178 Clinical and Laboratory Outcomes of First and Second Episodes of COVID-19 in Patients with Sickle Cell Disease: A Retrospective Comparative Cohort Study

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Medical student

Background:

Sickle cell disease (SCD) is an inherited hemoglobinopathy marked by chronic hemolysis, vaso-occlusive crises, and heightened susceptibility to infections. Individuals with SCD are particularly vulnerable to severe complications from COVID-19 due to their immunocompromised state. While the effects of an initial COVID-19 infection in SCD patients have been explored, limited data exist regarding reinfection outcomes.

Objective:

This study aims to compare the clinical, laboratory, and outcome parameters of SCD patients during their first and second episodes of COVID-19 infection.

Materials and Methods:

A retrospective cohort study was conducted at Sultan Qaboos University Hospital (SQUH) from January 2020 to December 2023. Patients with confirmed SCD and at least one documented episode of COVID-19 were included. Clinical symptoms, laboratory parameters, treatment details, and outcomes were analyzed using descriptive statistics and comparative analysis. Differences between the first and second infections were assessed using Chi-square and Student's t-tests, with statistical significance set at $p < 0.05$.

Results:

Among 265 SCD patients, a total of 27 SCD patients who experienced two episodes of COVID-19 were included in the study. The median age was 30.6 years, with a male-to-female ratio of 10:17. Hospitalization rates were higher during the second infection (92.6% vs. 70%, $p = 0.07$), but disease severity was milder, with fewer ICU admissions (0% vs. 3.7%, $p = 0.22$) and reduced ventilatory support requirements (0% vs. 7.4%, $p = 0.43$). Hemoglobin levels declined significantly in both episodes ($p < 0.01$), while inflammatory markers remained elevated. Despite increased morbidity, there were no reported deaths.

Conclusion :

SCD patients with COVID-19 reinfection experienced higher hospitalization rates but a less severe disease course, potentially due to immune adaptation or improved management strategies. These findings highlight the need for continued surveillance, early intervention, and further research to understand long-term outcomes in SCD patients with recurrent COVID-19 infections.

Key words:

Sickle cell disease, COVID-19, reinfection, hematological changes, immune adaptation, retrospective cohort study

MENA-P-188 Clinical and Laboratory Outcomes of First and Second Episodes of COVID-19 in Patients with Sickle Cell Disease: A Retrospective Comparative Cohort Study

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Background:

Hemophilia is a rare bleeding disorder which results from a decreased level of specific clotting factors , mainly factor VIII (Hemophilia A) or factor IX (Hemophilia B) .The clinical severity of hemophilia is directly related to the concentration of these factors in the blood .The absence of a national registry , coupled with limited access to diagnostic facilities and a lack of public awareness , contributes to the underestimation of hemophilia in Pakistan,

Aims:

This study aims to describe the hemophilia spectrum, along with its clinical consequences, in a resource-limited region of Pakistan, utilizing an underdiagnosed multidisciplinary approach.

Methods:

A descriptive retrospective study was performed at the Fatmeed Foundation (hemophilia treatment centers in Pakistan). Patients diagnosed with hemophilia A or B from 2019 to 2024 (N=90) were included. The collected information comprised age, sex, factor VIII/IX quantification classifying them into different severities, bleeding episodes, longitudinal study of arthropathy, chronic joint changes, Hepatitis and HIV serology. Participants' clinical outcomes were evaluated based on the severity of the disease and the resources available.

Results:

Among the study population of 90,94.4% were males and 5.5% were females. In our study cohort 88% had hemophilia A, and 12% had hemophilia B. According to the severity classification, 43.3% of the patients had severe hemophilia, 37.7% had moderate hemophilia, and 18.8% had mild hemophilia. 13.3% of the patients had hemophiliac arthropathy, primarily those with severe degree of hemophilia. In addition, 14.4% of patients had substantial impairment and chronic pain along with recurrent episodes of bleeding. Due to the restricted availability of factor concentrates, which were mostly used for severe bleeding episodes, on-demand therapies were given. As a result, fresh frozen plasma transfusions were given to numerous patients. Serological evaluations revealed that 4.4% of patients were positive for Hepatitis C.

Conclusion:

Pakistan's low-income setting sharpens the focus on hemophilia's features, such as high incidence of severe disease, late diagnosis, and grave clinical consequences stemming from inadequate access to comprehensive care specially preventative treatment. This highlights the need for immediate action directed towards strengthening the healthcare infrastructure, improving the diagnostic systems, ensuring reliable access to factor concentrates, and establishing systematic care models aimed at mitigating the long-term morbidity and mortality in a low- and middle-income settings like Pakistan.

This research was supported by Fatmeed foundation however they have no role in analyzing data and conceptualization of this research

MENA-P-191 Predictors of choices for place of death for Saudi patients with incurable cancer from King Abdul-Aziz Medical City, Riyadh, Saudi Arabia

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Background:

In most industrialist countries, up to35% of patients are choosing end of lifecare in their homes and around familiar neighborhoods, however, in contrast to this

prevailing trend, most patients in the Kingdom of Saudi Arabia are still dying in tertiary care centers. There is enormous cost in care of terminally ill cancer patients, the findings from USA study echo Kingdom of Saudi Arabia spending, $32,379 in hospital versus $4,760 in home during the last 30 days for end-of-life care.

This trend of dying in hospitals is also raising financial burden for the health-care budget of the Kingdom, according to several reported studies, cost of dying in the hospital versus in home, have significant financial impact on the health-care budget, this trend of dying in hospitals have a substantial burden on quality of life for terminally ill patients, as most patients would go through significant unnecessary interventions in the last few days of their life, without having a meaningful impact on quality of life or mortality.

Methods:

During collection of data, following techniques were used retrospective, exploratory and descriptive methods were used to explore the preferences for the place of death from patients and loved ones.

Results:

92% among survey population wanted to have death in familiar home settings, surrounded by loved ones.100% have metastatic cancer and have been enrolled in palliative care with no further curative options. Majority of sample population have primary level education, majority of were middle or lower social class. Higher education was not a factor to determine the place of death

Discussion:

Terminally ill cancer patients want to die at home. Do not want to go to ER for basic symptoms management. Majority of the sample population wanted to have a compassionate, optimal and timely support services to address their end-of-life needs in familiar home settings. Majority have extended support system among survey population.

MENA-P-192 Clinical and Therapeutic Profile of Non-Hodgkin's Lymphoma: A Retrospective Study From a Najran Oncology Center

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Background

Non-Hodgkin lymphomas (NHL) represent a group of lymphoproliferative disorders, with a limited understanding of their clinical spectrum, primary extranodal variety, histopathology, and immunohistochemistry, particularly in developing countries. The objective of this study was to evaluate the clinicopathological characteristics and survival rates of NHL patients treated at King Khaled Hospital in Najran City, Saudi Arabia.

Methodology

In this retrospective chart review of NHL cases that received chemotherapy at the Oncology Center of King Khaled Hospital in Najran City, Saudi Arabia, between 2014 and 2021, we evaluated the clinicopathological features, survival rate, and associated factors. Using standardized data collection sheets, we extracted information on patients' age, gender, tumor type, stage, baseline laboratory evaluations, disease status, cancer treatment, and survival from electronic medical records. Univariate analysis was employed to identify factors associated with mortality and relapse.

Results

We included 43 NHL patients with a mean age of 59.23 ± 20.17 years, with a higher frequency among females (65.1%). B symptoms were present in 32 (74.4%) cases. The common primary site was peripheral lymph nodes (79.1%). Diffuse large B-cell lymphoma was the most common morphologic type (67.4%), and 46.5% of the patients had advanced-stage disease (stages III-IV). All patients received the first line of treatment, with the most common chemotherapy used being the RCHOP regimen (67.4%). Additionally, radiotherapy was performed in seven (16.3%) cases. Relapse occurred in eight (18.6%) cases with a median period of 47.5 months (Min: 20 - Max: 77 months). The mean overall survival time was 43.25 ± 2.98 months (range 12-168 months), and the one, three, and five-year survival rates were 91%, 58%, and 38%, respectively, and the mortality rate was 32.6%. Univariate analysis showed that Burkitt lymphoma had an odds ratio (OR) of 11.87 (95% confidence interval (CI): 1.58-89.09, p=0.016) and elevated lactate dehydrogenase (LDH) (OR: 1.26; 95% CI: 0.35-4.54), p=0.014, which were associated with mortality. Moreover, advanced age and the total number of first chemotherapy cycles were associated with relapse ($p< 0.05$).

Conclusion

The study highlights the variability of NHL cases, with a significant proportion presenting with advanced-stage disease and in middle age. The results suggest poor survival rates for patients with Burkitt lymphoma subtypes and elevated LDH levels.

Keywords: chemotherapy; Najran city; non-Hodgkin’s lymphoma; Saudi Arabia; survival rate.

MENA-P-193 Predictors of choices for place of death for Saudi patients with incurable cancer from King Abdul-Aziz Medical City, Riyadh, Saudi Arabia

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Myeloproliferative Neoplasms (MPNs) are hematological disorders characterized by increased production of myeloid lineage blood cells. MPNs are categorized as Philadelphia (Ph) chromosome-positive, including Chronic Myeloid Leukemia (CML), Ph chromosome-negative, Polycythemia Vera (PV), Essential Thrombocythemia (ET), and Primary Myelofibrosis (PMF). Limited data exist on the frequency of MPNs and their molecular markers in the Saudi population. This study aimed to identify the common MPN subtypes and their associated molecular markers in Saudi citizens residing in the Al-Madinah Region.

We retrospectively analyzed the clinical data of 60 patients between 2014 and 2023. Bone marrow samples were analyzed for mutations in the BCR-ABL, JAK2, CALR, and MPL genes using karyotyping, specific FISH panels, and various mutation detection methods, including Sanger sequencing.

Our findings revealed that MPNs were more prevalent (78%) than Acute Myeloid Leukemia (AML; 11.6%) and Acute Lymphoblastic Leukemia (ALL; 10%) in the study population. Among MPNs, CML was the most common (34%), followed by equal rates of PV and ET (27.6% each), with PMF showing the lowest incidence (10.6%). Molecular biomarker analysis demonstrated BCR-ABL-positive mutations in all CML cases, JAK2-positive mutations in all PV cases, and the most frequent mutation in PMF cases. ET and PMF cases exhibited various mutation patterns, with triple-negative status for JAK2, CALR,
and MPL being the most frequent molecular alterations in ET.

This study represents the first estimation of Ph chromosome-negative MPN incidence and identification of common molecular biomarkers used for diagnosis in Saudi Arabia. Further studies with larger sample sizes and broader regional coverage are required to confirm these findings and to provide a more comprehensive understanding of MPNs in the Saudi population.

MENA-P-198 Clinical and Therapeutic Profile of Non-Hodgkin's Lymphoma: A Retrospective Study From a Najran Oncology Center

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Background & Objective:

Children diagnosed with cancer are more likely to have vitamin D problems due to compromised health before diagnosis, the disease itself, and cancer treatments. Previous studies, albeit limited in scope, has shown an elevated prevalence of vitamin D deficiency in pediatric oncology patients. This study aims primarily to describe the prevalence of vitamin D insufficiency among children with cancer in Lebanon.

Subjects & Methods:

This was an unmatched case control study comparing vitamin D levels among Lebanese children diagnosed with cancer (cases) to children without cancer (controls) in Lebanon. Serum vitamin D levels were determined for both cases and controls. Vitamin D status was evaluated by categorizing patients into two groups: hypovitaminosis D, defined as 25(OH)D levels < 30 ng/ml, and normal levels, defined as 25(OH)D levels ≥ 30 ng/ml. Additionally, patients were classified according to the endocrine society recommendations: deficiency (25(OH)D ≤ 20 ng/ml), insufficiency (25(OH)D 21−29 ng/ml), and normal levels (25(OH)D ≥ 30 ng/ml).

Results:

This unmatched case-control study included a total of 268 patients with 67 oncology pediatric patients (cases) and 201 non-oncology pediatric patients (control). The prevalence of vitamin D insufficiency and deficiency among cancer children were 16.45% and 80.6%, respectively. In contrast, among non-oncology patients, 32.4% showed vitamin D insufficiency, and 38% had vitamin D deficiency.we found a significant association between having cancer and the classification of vitamin D levels. Age and the duration of chemotherapy were significantly associated with vitamin D levels in children with cancer, with older children and those receiveing chemotherapy for less than one year having lower vitamin D levels.

Conclusion: Among children diagnosed with cancer, a notable prevalence of vitamin D deficiency is observed, highlighting this subgroup as particularly high-risk and, therefore, underscoring the significance of early detection and supplementation in this specific high-risk population.

MENA-P-201 The Role of Platelet-to-Neutrophil Ratio (PNR) as a Biomarker for Pulmonary Hypertension and Echocardiographic Changes in Sickle Cell Disease Patients: A Retrospective Cohort Study

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Title:

The Role of Platelet-to-Neutrophil Ratio (PNR) as a Biomarker for Pulmonary Hypertension and Echocardiographic Changes in Sickle Cell Disease Patients: A Retrospective Cohort Study

Background:

Sickle cell disease (SCD) is a chronic hemoglobinopathy characterized by persistent inflammation, vaso-occlusion, and progressive organ damage. Pulmonary hypertension (PH), affecting 6–10% of adults with SCD, is a serious complication defined as a mean pulmonary artery pressure (mPAP) > 20 mmHg. Echocardiographic features such as right ventricular dilation (RVD) and right atrial enlargement (RAE) are frequently associated with PH. The platelet-to-neutrophil ratio (PNR), representing platelet activation and neutrophil-driven inflammation, has emerged as a potential biomarker in SCD. However, its relationship with PH and echocardiographic changes remains unexplored.

Aims:

This study investigates associations between PH and PNR in SCD and evaluates whether both correlate with hydroxyurea use, hematologic parameters, complications, and echocardiographic changes.

Methods:

This retrospective cohort study was conducted at King Fahd Hospital, Al Khobar, Saudi Arabia, and included 115 SCD patients aged >14 years with echocardiogram reports. Data were extracted from electronic medical records January 2019 to January 2025. PH was defined as mPAP > 20 mmHg, estimated using pulmonary artery systolic pressure and acceleration time per 2023 American Society of Echocardiography (ASE) guidelines. PNR was calculated by dividing absolute platelet count by absolute neutrophil count. Additional variables included age, gender, echocardiographic findings (RVD, RAE), history of complications (acute chest syndrome, pulmonary embolism, stroke, heart failure), and laboratory parameters (hemoglobin, hemoglobin S, fetal hemoglobin). Statistical analyses were performed using Chi-square and ANOVA in SPSS v26. Ethical approval was obtained (IRB-UGS-2024-01-730).

Results:

PH was significantly associated with hydroxyurea use($p = 0.024$), ACS($p = 0.009$), RVD($p = 0.041$), higher HbS($p = 0.015$), and lower HbF($p = 0.016$). PNR was not significantly associated with PH (Table 1). Stratified analysis revealed that higher PNR levels correlated with prior pulmonary embolism ($p = 0.011$) and lower HbF($p = 0.049$) (Table 2).

Conclusions:

Although PNR was not independently linked to PH in SCD, tertile analysis revealed associations with prior pulmonary embolism and lower HbF, suggesting it may reflect chronic vascular complications rather than predict PH directly. Echocardiographic abnormalities and markers such as ACS, HbS, and HbF remain stronger predictors of PH.

MENA-P-207 A Quality Initiative to Improve IVC Filter Use and Retrieval: Translating Guidelines into Practice

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Introduction

IVC filters are used to prevent pulmonary embolism in patients with venous thromboembolism who cannot receive anticoagulation. However, their use has often extended beyond evidence-based indications. Guidelines also emphasize prompt retrieval once anticoagulation can be safely resumed.

Why This Project

Baseline analysis revealed 27% of IVC filters were inserted without an appropriate indication based on our, which align with ASH recommendations. Additionally, 24% of filters were not retrieved.

The aim of this project was to improve the use of IVC filters and to increase the rate of retrieval.

Methods

We applied the Harvard 7-step and PDSA cycles to address both overuse and under retrieval. Outcomes were measured over two periods: a pre-intervention (March–September 2024) and a post-intervention(October 2024–May 2025). Fisher's exact test to assess statistical significance and Statistical process control (SPC) were constructed to identify special cause variation using Western Electric rules.

Interventions:

1. Establishment of policy restricting insertion to Hematology

Baseline data showed that hematology consultation was associated with significantly higher appropriateness of IVC filter insertion (92.3% vs. 70.6%). we implemented a policy requiring hematology approval prior to insertion.

2. Automatic Consultation to IVC filter team Upon Filter Request

An automatic email alert system triggered by any filter order in the EHR. The thrombosis quality specialist receives the alert and informs the IVC filter team, who assess appropriateness, and communicate directly with the primary team to guide evidence-based decisions.

3. Weekly Review

A dedicated IVC filter team—comprising a hematology consultant, fellow, and quality specialist —conducts weekly rounds to review all inpatients with filters. Each case is reassessed, a retrieval plan is documented, and the primary team is contacted to ensure implementation.

4. Education of Healthcare Providers

Result

Following the intervention, the appropriateness of filter insertion improved from 72.7% (48/66) to 91.4% (64/70), p = 0.0028. SPC analysis demonstrated special cause variation, triggered by Rule #3 .Similarly, the retrieval rate increased from 76% (38/50) to 92.3% (48/52), p = 0.0062. SPC analysis showed special cause variation triggered by Rule #4.

The median time to IVC filter retrieval decreased from 35 days (IQR 18–60) to 22 days (IQR 14–51), p = 0.180, Mann–Whitney U test.

Conclusion

This quality improvement initiative successfully translated clinical guidelines into practice through a multifaceted strategy. The intervention led to significant improvements in IVC filter appropriateness and timely retrieval. Next steps include scaling the model to other centers to support broader guideline adherence in thrombosis care.

MENA-P-208 A Quality Initiative to Improve IVC Filter Use and Retrieval: Translating Guidelines into Practice

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Background:

Bone marrow biopsy is a key diagnostic tool in hematology, yet safety data in anticoagulated patients remain limited. Practice varies widely, with some clinicians interrupting anticoagulation and others proceeding without changes. This systematic review and meta-analysis aimed to clarify the safety profile of bone marrow biopsy in anticoagulated patients.

Methods:

Following PRISMA guidelines, we searched PubMed, Embase, Cochrane Library, and Web of Science from 1990 to December 2024. Eligible studies reported bleeding outcomes in anticoagulated patients undergoing bone marrow biopsy. The primary outcome was major bleeding; secondary outcomes included minor bleeding, thrombotic events, and bleeding risk factors. Random-effects meta-analysis was performed using R software.

Results:

Seven studies (78,574 procedures; 1,078 anticoagulated patients, 1.4%) were included. The pooled major bleeding rate was 0.053% (95% CI: 0.040–0.072%), or fewer than 1 in 1,800 procedures. In anticoagulated patients, the rate was 0.278% (95% CI: 0.095–0.815%), about 1 in 360 procedures. Heterogeneity was negligible ($\tau^2 = 0.000$, $I^2 = 0\%$). Significant risk factors included myeloproliferative neoplasms (OR 4.12, 95% CI: 1.67–10.15) and severe thrombocytopenia <50×10⁹/L (OR 3.45, 95% CI: 1.23–9.67). Anticoagulation status alone was not significantly associated with increased bleeding risk (OR 0.85, 95% CI: 0.23–3.12).

Conclusions:

Bone marrow biopsy has an excellent safety profile, with major bleeding rates <0.1% overall and <0.3% in anticoagulated patients. Findings do not support routine interruption of anticoagulation before biopsy. Risk assessment should focus on established predictors such as myeloproliferative neoplasms and severe thrombocytopenia. Results support a shift toward more liberal biopsy practices in anticoagulated patients.

MENA-P-212 Telomere Length and response to imatinib therapy in newly diagnosed Chronic Myeloid Leukemia patients-Chronic phase: Measured by Flow-FISH technique

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Background:

Telomere length measurement has been assessed by many previous studies In CML patients. Telomere shortening was found to correlate with disease progression. The aim of our study was to measure Relative Telomere Length (RTL) in chronic phase CML patients before imatinib therapy and correlate it with their molecular response after 6 months.

Methods:

This study included 38 CML patients in chronic phase and 40 normal adult controls. RTL was assessed in leukocytes by Flow-FISH technique.

Results:

This work revealed significant reduction of the RTL in CML patients than normal control. RTL showed negative correlation with BCR-ABL gene expression measured at diagnosis (p=>0.001). Patients who did not show complete molecular remission had longer telomere length (mean 0.24±0.05) than patient got complete molecular remission (mean 0.011±0.04), and the difference was statistically significance (P =0.048).

Conclusion:

Shortening of TL may have a role in the pathogenesis of the disease, and may be used as a predictor to patient´s molecular response to Tyrosine Kinase Inhibitors therapy (TKIs).

MENA-P-214 Knowledge, Attitudes, and Practices of Voluntary Blood Donation: Exploring AI's Role in Promoting Awareness and Participation in Makkah

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Background:

Voluntary blood donation is an essential part of healthcare systems, yet participation in many regions, including Makkah, remains suboptimal. Despite its importance for managing trauma, surgeries, hematologic disorders, and chronic diseases, donation behaviors are influenced by public awareness, attitudes, and perceived barriers. With artificial intelligence (AI) emerging as a promising tool in health education and service delivery, there is a growing interest in its potential to improve donor engagement. This study aimed to assess the knowledge, attitudes, and practices (KAP) related to voluntary blood donation and to evaluate public perceptions of AI-based applications in

enhancing donation awareness and participation.

Methods:

A cross-sectional descriptive study was conducted among 1,847 residents of the Makkah region using a bilingual, self-administered online questionnaire. The survey included five sections: demographics, knowledge of blood donation, attitudes and practices, and engagement with AI tools. Participants were recruited via convenience sampling across social media platforms and institutional channels. Composite scores were computed for knowledge, perceived importance of donation, and AI acceptability. Associations between variables were analyzed using multiple linear and logistic regression models, with p-values <0.05 considered statistically significant.

Results:

While 74.2% of participants were aware of voluntary donation, only 47.4% knew the correct legal donation age, and just 12.6% identified the correct maximum annual frequency. Approximately 38% of respondents had donated blood, with donation behavior positively associated with knowledge score and AI acceptability. The majority of respondents expressed willingness to use AI apps for finding donation centers, educational content, and reminders. Barriers included lack of time, fear of needles, and limited awareness. Male gender, higher income, and prior donation history were strong predictors of both knowledge and donation status.

Conclusion:

This study shows public openness to AI in overcoming blood donation barriers and enhancing outreach efforts. Integrating behavioral insights with technology reveals opportunities for AI-driven personalized interventions. Knowledgeable, tech-accepting individuals are more likely to donate, indicating that data platforms can increase engagement. These insights assist blood services, policymakers, and developers in creating AI solutions for a sustainable blood supply in Saudi Arabia and worldwide settings.

MENA-P-218 Experience and Outcomes from the First Comprehensive Pediatric Private Hematopoietic Stem Cell Transplantation Center in Jordan

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Background :

Hematopoietic stem cell transplantation (HSCT) is a well-established treatment for various conditions. In the Eastern Mediterranean region, pediatric HSCT services face distinct challenges, including a large pediatric population and high rates of consanguinity, which contribute to a higher prevalence of genetic diseases and increased demand for transplantation. The current availability of transplant teams in the region falls short of meeting this growing need. Incorporating private transplant services could help address this demand.

Methods

A retrospective review of all patients under the age of 18 years who received HSCT at the Bone Marrow and Stem Cell Transplantation Center, Istishari Hospital, Jordan.

Results

In June 2016, this private center of excellence was established with the mission of providing comprehensive and personalized care to patients suffering from a wide range of hematological disorders and malignancies. Serving not only the Jordanian population but also individuals from surrounding countries, the center aims to deliver advanced, individualized treatment plans tailored to each patient's specific needs, ensuring the highest standards of care.

Since then, 65 patients received 68 HSCTs; 58 (85%) were allogenic and 10 (15%) were autologous. The median age of the cohort was 6.5 (0.6-17) years; 40 (61%) were males. The primary indication for allogeneic HSCT was leukemia (n=23, 40%), followed by severe aplastic anemia (SAA; n=12, 21%), hemoglobinopathies (n=10, 17%), bone marrow failure syndromes (n=5, 8%), primary immunodeficiency (n=5, 8%), inherited metabolic diseases (n=1, 2%), and lymphoma (n=1, 2%). For autologous HSCT, neuroblastoma was the main indication (n=6, 60%). Among the allogeneic transplants, 30 (52%) utilized matched related donors, while 28 (48%) were haploidentical. Peripheral blood stem cells were the graft source in 44 transplants (64%). Primary graft failure occurred in 1 patient with SAA who later engrafted after a second transplant. At a median follow-up of 50 (3-106) months, 52 patients were alive and free of primary disease, yielding an overall survival rate of 80% with transplant-related mortality (TRM) of 4.6%. A remarkable 100% survival was observed in patients with benign hematological diseases.

Conclusion

We observed good outcomes that are comparable to international data. Establishing private HSCT services allows more patients to benefit from this potentially life-saving treatment.

MENA-P-223 Hemophagocytic Lymphohystiocytosis triggered by Dengue fever with underlying Acute Myeloid Leukemia: a case report and literature review

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Background

Hemophagocytic lymphohistiocytosis (HLH) is a rare and aggressive immune dysregulation syndrome, often set off by infections, malignancies, or autoimmune conditions. Although most cases linked to cancer involve T- or NK-cell lymphomas, HLH associated with acute myeloid leukemia (AML) is unusual and poorly understood. Viral infections, including dengue, may serve as potent triggers in susceptible individuals, especially in regions where such infections are endemic.

Case Presentation

We describe a 24-year-old man who presented with persistent high fever, fatigue, and pancytopenia, shortly after recovering from a dengue virus infection. Laboratory tests revealed hyperferritinemia, coagulopathy, and signs of liver inflammation. A bone marrow biopsy showed 78% blasts, consistent with AML with myelomonocytic features. Cytogenetic studies identified a complex karyotype, including t(1;9)(q42;q22) and add(11)(q23), suggesting possible involvement of the MLL gene region. Based on clinical and laboratory findings, the patient met five of the eight HLH-2004 diagnostic criteria. Despite intensive supportive treatment, including intravenous immunoglobulin and blood products, he developed disseminated intravascular coagulation and died of multiorgan failure within days of diagnosis.

Discussion

This case reflects the rare and severe presentation of HLH occurring at the time of AML diagnosis, likely triggered by a recent dengue infection. Our review of the literature revealed similar cases where HLH occurred before, during, or after AML, most often in younger patients with high-risk cytogenetics and aggressive disease. Outcomes in these cases were frequently poor, especially when diagnosis and treatment were delayed or complicated by infection or chemotherapy.

Conclusion

This case highlights the importance of considering HLH in patients with unexplained systemic inflammation, particularly when there is a known hematologic malignancy and recent viral illness. Early recognition and intervention are critical, though prognosis remains guarded in patients with concurrent HLH and AML.