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CHEMOTHERAPY COMPETENCIES FOR PEDIATRIC ONCOLOGY NURSES: STANDARDIZING ASSESSMENT IN A SINGLE CENTRE IN INDIA

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Background: Chemotherapy administration is a specialized nursing responsibility requiring expertise, knowledge and skill. Standardized assessments of competency helps ensuring safety and care for children receiving chemotherapy. Hence the present study was undertaken to study the impact of standardised chemotherapy training and assessments.

Methods: This was an observational study carried out in department of paediatric haematology oncology at our institute from August 2021 to August 2022.

A 25 pointer chemotherapy competency checklist was created with score of 1 given to each step involved before, during and after administration of chemotherapy. Bedside real-time competency was done by team of head-nurse, nurse educator and a physician. All new nurses were assessed at 4 week and 8 weeks after training. Re-enforcement training was repeated till a score of 100% was achieved. Feedback was collected at end, for usefulness of competency on a score of 10.

Results: 20 new nurses were appointed in the department during study period. Of which 18 underwent chemotherapy competency during study period and 2 nurses opted another unit.

At 4 weeks, 55% (10/18) nurses cleared chemotherapy competency in two rounds. Of these, 80% (8/10) nurses had previous experience of oncology outside the unit/elsewhere and 90% had previous clinical experience in paediatric/adult medicine. However, 33% (6/18) and 11% (2/18) nurses required 3 and 4 rounds for clearing competency respectively and 25% had previous clinical experience but none had any oncology experience.

At 8 weeks, majority (78%) nurses cleared chemotherapy competency in first round, followed by 22% in second round. All nurses found chemotherapy competency useful with a median score of 9 (9-10).

Conclusions: Bedside real-time chemotherapy competency was feasible and helped to assess skills, abilities and judgement required for safe administration of chemotherapy. Re-enforcement training helped new nurses to enhance their knowledge and confidence in handling of chemotherapy and addressing their own and families queries.

CHEMOTHERAPY FLASH CARDS: A TOOL FOR REFLECTION PRACTICE FOR NURSES IN AN LMIC SETTING

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Background: Paediatric oncology nursing is an expertise branch involving administration of chemotherapy and managing its adverse effects. This study was undertaken to initiate reflective practice by aid of chemotherapy flash cards as an active intervention to enhance new nurses knowledge on safe administration of chemotherapy.

Methods: This was an observational study carried out in department of paediatric haematology oncology at our institute from June 2021 to June 2022.

A team-leader was appointed to explain flash cards[specific to tumor, eliciting drugs and doses, adverse effects and its management and/or any vital information eg: infusion-hours] and assured its compliance for usage during 8 weeks of supervision period.

A pre and post-test was carried out bedside and through written formal assessments(score out of 10) and re-enforcement training was carried out for nurses that scored <7. A feedback was collected at end, for usefulness of flash cards on a score of 10.

Results: 18 New nurses were appointed in the department and underwent training for flash cards. Nearly 33% (6/18) had competent level of nursing core competencies through nurses reflection (flash cards) pre-intervention compared to 78% (14/18)post-intervention. 67% (4/6) nurses who cleared chemotherapy competency and flash card assessment after first exposure, had previous oncology experience prior to joining our unit.

Only 22% (4/18) nurses required a third re-enforcement, and all (100%) had no previous clinical experience in nursing.

28% (5/18) and 72% (13/18) nurses found the flash cards useful (score 7-8) and extremely useful(score 9-10) respectively. Median score of nurses feedback for flash card was 8.5 (7-10).

Conclusions: The findings indicate that flash cards can be implemented successfully and had a positive impact of reflective thinking intervention on improving knowledge on administering chemotherapy amongst new nurses.

It is part of our on-going effort to rigorously initiate and enhance safe chemotherapy administration practices in a LMIC setting.

JUVENILE IDIOPATHIC ARTHRITIS VS ACUTE LEUKEMIA: IS BONE MARROW MORPHOLOGY ENOUGH?

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Background: Acute leukaemia in children commonly presents with signs of bone marrow failure, fever, organomegaly and bone pains. Joint swelling and pain mimicking juvenile idiopathic arthritis (JIA) is not so uncommon.

Hence, bone marrow examination is needed to rule out acute leukemia in suspicion of JIA before starting treatment. We report a child with JIA presented with tumour lysis syndrome where diagnosis of acute lymphoblastic leukemia was missed on morphological examination of bone marrow but detected on flow cytometry.

Methods: case report

Results: A seven-year female presented with the prolonged fever, multiple joint pain and swelling. There was no hepatosplenomegaly/lymphadenopathy. Peripheral blood counts and tumour lysis work up was normal. Diagnosis of JIA was considered but referred to pediatric hematology-oncology to rule out leukemia before starting steroid.

Bone marrow morphology and karyotyping was normal, hence cleared for treatment for JIA. She received one month of steroid followed by 3 doses of weekly methotrexate with symptomatic improvement. Then she presented with fever and vomiting for 2 days. On examination she had hepatosplenomegaly but no lymphadenopathy. Imaging revealed bilateral nephromegaly, ascites, and pleural effusion. Investigations revealed pancytopenia with no abnormal cells, severe tumour lysis syndrome and renal failure.

Bone marrow morphology was normal with hemophagocytosis. Criteria for hemophagocytic lymphohistiocytosis (HLH 2004) were met. Due to high suspicion of acute leukemia flow cytometry was sent which revealed 1.37% B-lymphoblasts s/o diagnosis of B-acute lymphoblastic leukemia (B-ALL).

Karyotyping was normal and B-ALL polymerase chain reaction was negative. She received intensive phase as per high risk B-ALL and on first maintenance chemotherapy. She achieved negative minimal residual disease after induction.

Conclusions: Bone marrow flow cytometry must be processed if high suspicion of leukemia even if bone marrow blasts are within normal limits specially in partially treated cases.

COMPARISON OF CLINICAL OUTCOME BETWEEN IMMUNOCOMPETENT AND IMMUNOCOMPROMISED CHILDREN AGED 1-12 YEARS ADMITTED WITH ACUTE COVID 19 INFECTION A RETROSPECTIVE REVIEW

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Background: The pandemic caused by severe acute respiratory syndrome...
coronavirus 2 (SARS CoV-2) has created havoc in adults and children alike. Immunocompromised children are considered a high-risk group for the severe manifestation of COVID-19 infection. There are conflicting reports on the outcome of SARS CoV-2 infection in immunocompromised children. The study was aimed to determine the difference in clinical outcome between immunocompetent and immunocompromised children aged between 1-12 years in terms of their COVID-19 manifestations.

**Methods:** A retrospective chart review of children admitted with COVID-19 infection in a tertiary care pediatric hospital in Northern India from October 1, 2020, to March 31, 2021, was done. There were fifty-two COVID-19 positive children aged 1-12 years admitted during the study period. The study participants were divided into two groups- immunocompetent and Immunocompromised patients. For every one Immunocompromised child enrolled in the study, a consecutive immunocompetent child was enrolled. Their clinical features, laboratory parameters, treatment needs, and outcome were compared.

**Results:** Among 35 patients enrolled (the first enrollment was of immunocompetent child, after that one consecutive admission of immunocompetent after every immunocompromised child was done. Seventeen children were immunocompromised and eighteen children were immunocompetent.). 17 were immunocompromised and 18 were immunocompetent. The median duration of stay, clinical features, laboratory parameters, and the severity of illness, treatment needs and outcome were compared between the two groups.

**Conclusions:** Immunocompromised children are not at a higher risk of severe COVID-19 manifestation compared to immunocompetent children.

**PSYCHO-SOCIAL PROBLEMS FACED BY SURVIVORS OF CHILDHOOD SOLID MALIGNANT TUMOURS**

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**Background:** Several survivors of paediatric solid tumours experience significant disease or treatment related sequelae. These adverse health outcomes can be both physiological, psychological, and behavioural. The aim of the present study was to assess the long-term psycho-social effects faced by the survivors of solid malignant tumours.

**Methods:** Survivors were assessed for behavioural problems with help of Child Behaviour Checklist. They were assessed for Intellectual Disabilities with Binet-Kamat Intelligence Scale and were also screened for post-traumatic stress disorder (PTSD) with the help of Children Impact of Event Scale (CRIES-13).

**Results:** Ninety-seven survivors with a median age of 9 years (6-13 years) were included. There were 62 males (63.92%) and 35 females (36.08%). The evaluation was done at a median age of 5 years (2 to 13 years) after treatment completion. The median age of time since diagnosis was 6 years. Out of 97 survivors, 41 (42.27%) children had behavioural problems. Internalizing problems were found in 9/97 (9.28%) patients (anxiety issues (n=3, 3.09%) and depression (n=4, 4.12%); externalizing problems were found in 19 (19.50%) patients (conduct problems (n=15, 15.46%) and oppositional-defiant behaviour (n=1, 1.03%) and 13 (13.40) children had attention-deficit problems. Gender and time since treatment completion and evaluation had no significant effect on the patient having internalizing & externalizing problems and PTSD. Awareness that the child had some behavioural problems before evaluation was witnessed in 45 (46.39%) parents. Out of 94, 16 (17.02%) parents felt that they had a difficult child. Intelligence Quotient (IQ) was assessed and it was found that 20 (20.62%) patients had some degree of intellectual disability and PTSD was also screened in 11 (11.34%) patients.

**Conclusions:** About half (42.27%) of the survivors of childhood cancer experience long-term psycho-social consequences. Thus, survivors must be monitored during and post treatment for co-morbid psycho-social consequences to improve their quality of life.

**ERDHEIM-CHESTER DISEASE IN A CASE OF B CELL ACUTE LYMPHOBLASTIC LEUKAEMIA (INFANT ALL): UNCOMMON PRESENTATION**

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**Background:** Erdheim-Chester disease (ECD) is a multisystem non-Langerhans histiocytosis most commonly seen in adults but very rare in Pediatric patients. Erdheim-Chester disease is a rare, non-Langerhans systemic histiocytosis most commonly characterised by bilateral sclerosis of the meta and diphyseal regions of the long bones and infiltration in multiple organs. So far only handful cases have been reported in young pediatric population and none in pediatric ALL, particularly Infant ALL. We report here a patient of Infant B- cell ALL in active treatment for ALL who in Delayed Intensification presented with features of acute osteomyelitis. With further clinical features and extensive work up, diagnosis of Erdheim Disease was established. Also patient was noticed to have extensive multisystem involvement: Multiple bones, b/l orbital lesions, b/l Kidneys and bone marrow. He was initially managed as FUO in a known Infant ALL, but MDT with expert involvement a final diagnosis of ErdheimChester could be established.IHC and BRAF mutational study was done and is consistent with ECD.

**Methods:** N/A

**Results:** N/A

**Conclusions:** ECD should also be considered as one of early differential when evaluating a child as FUO in established ALL Pediatric patients receiving treatment and accordingly modify treatment plan.

**A CASE OF ACUTE PROMYELOCYTIC LEUKAEMIA WITH ABSENCE OF PML-RARA FUSION PROTEIN INVOLVING COMPLEX CYTOGENETIC ISCHROMOSOME 17**

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**Background:** Acute Promyelocytic Leukemia (APML) is a clinically distinct subtype of Acute Myeloid Leukemia (AML) cytogenetically characterized by balanced translocation of t (15:17) resulting in PML-RARA fusion gene responsible for leukemogenesis in 90% of these patients. Early diagnosis and treatment initiation with differentiating agents like All Trans Retinoic Acid (ATRA) and Arsenic Trioxide (ATO) leads to conversion of this potentially fatal condition into highly curable disease with a complete remission rate of about 90%. However, sometimes there is no typical t (15, 17) and APML is associated with complex chromosomal translocations which may affect the prognosis.

**Methods:** A 3 year old boy, presented with complaints of fever and appetite loss for 10 days and abdominal distension for 4 days. Child was initially taken to outside hospital where bone marrow aspiration done was suggestive of 22% blasts and was then referred to our hospital. Patient was investigated further with Bone Marrow Aspiration, flow cytometry, molecular and cytogenetics panel.

**Results:** Bone marrow aspiration revealed Myeloperoxidase (MPO) positive blasts. On flowcytometric analysis, the blasts cells expressed CD13, CD33, CD117 and Myeloperoxidase while being negative for HLA-DR and CD 34 characteristically seen in Acute Promyelocytic leukemia. Patient was started on APML chemotherapy protocol with Cytarabine, Daunorubicin and All Trans Retinoic Acid (ATRA). Molecular panel however did not show the presence of PML: RARA fusion protein. Cytogenetics done further showed isochromosome 17q10. Hence diagnosis of cytogenetically cryptic Acute Promyelocytic leukemia was made. The child tolerated the first cycle of chemotherapy well. Serial fibrinogen values were normal and no bleeding episode was observed.

**Conclusions:** The present case thus highlights the necessity for employing multiple testing methodologies for identifying potentially cryptic and variant translocations to make sure none of these variants are missed out.