Evaluation of Patient- and Treatment-Related Factors in Patients with Venous Thromboembolism Managed Within a Pediatric Cancer Center

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Background

- Venous thromboembolism (VTE) is characterized by thrombus formation within the venous system
- Pediatric cancer patients have up to a 30-fold increased VTE risk compared to the general pediatric population[1]
- Cancer-associated thrombosis occurs in up to 16% of symptomatic and 40% of asymptomatic pediatric cases[2]
- A cohort study found thrombotic risk was 1.52 in cancer patients vs. 0.06 in noncancer controls/1,000 person-years[3]
- VTE-related management can cost $15,000 - $25,000/case
- Primary thromboprophylaxis is highly debated
- No existing Children's Oncology Group (COG) guidelines for VTE prophylaxis
- Current guidelines available for adult patients with malignancy[4]
- Potential pharmacologic thromboprophylaxis:
  - Low molecular weight heparin
  - Direct oral anticoagulants

Methods

Study Design: IRB-exempt, single-center, retrospective study

Inclusion Criteria	Exclusion Criteria
• 0-26 years of age • Diagnosed with an image-confirmed thrombus during cancer-directed treatment at JHCC • Received inpatient and/or outpatient oncologic treatment at JHCC	None

Primary Outcome
Characterize demographics, risk factors, and VTE features among patients managed by a pediatric oncology center diagnosed with thrombosis while undergoing cancer directed therapy

Secondary Outcome
Characterize prophylactic agents and dosing regimens used for the prevention of thrombosis

Discussion

- Baseline characteristics:
  - n=53, 58% of patients were male
  - mean age 15 years, mean BMI 22 kg/m^2
  - 72% of patients had a hematologic malignancy
- VTE characteristics:
  - 60% of patients had a deep vein thrombosis
- Known risk factors:
  - 94% had non-tunneled central access within 1 week prior to VTE
    - 48% - peripherally inserted central catheter (PICC)
    - 42% - port
- Acute lymphoblastic leukemia or lymphoma cohort:
  - 48% of patients clotted in induction, 24% in consolidation
  - 92% of patients received asparaginase products
    - 48% of these received 1 dose
- Prevention strategies:
  - 23% of patients had received LMWH prophylaxis

Objectives

- Discuss current literature on thromboprophylaxis recommendations for pediatric oncology patients
- Identify trends in patient- and treatment-related factors associated with VTE development during cancer-directed therapy
- Evaluate current institutional thromboprophylaxis guidelines for pediatric oncology patients

Disclosure

Authors of this presentation have no relevant financial relationships or conflicts of interests to disclose.

Supplemental Material

Conclusion

- VTE is a significant concern in pediatric oncology, and guidelines for thromboprophylaxis remain inconclusive
- Consider common risk factors for VTE: central venous access, asparaginase exposure, acute lymphoblastic leukemia
- Individual risk assessment is crucial, prior to pharmacologic prophylaxis

References

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