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POSTER ABSTRACTS

612.ACUTE LYMPHOBLASTIC LEUKEMIAS: CLINICAL AND EPIDEMIOLOGICAL

Thromboprophylaxis with Intermediate Dose Low Molecular Weight Heparin in Adults Undergoing Induction with L-Asparaginase for Acute Lymphoblastic Leukemia

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Introduction

Adolescents and young adults (AYA, defined as age 15-39 years) with acute lymphoblastic leukemia (ALL) have a poorer prognosis than their pediatric counterparts. To replicate the success of ALL treatment in children, pediatric-inspired regimens have been incorporated into the treatment of AYA and often include the use of L-asparaginase. Rates of thrombosis in adults receiving L-asparaginase for treatment of ALL have been reported to be as high as 34%, compared to only about 5% in pediatric patients. The risk of thrombosis is elevated primarily during the induction phase of treatment. Several strategies have been studied in adults, including antithrombin III replacement, fresh frozen plasma replacement, and prophylactic dosing of anticoagulation, however no clear guidelines exist on how to prevent thrombosis in these high-risk patients. To prevent L-asparaginase-induced thrombotic events, our institution implemented a standard practice of 1mg/kg/day of low molecular weight heparin (LMWH), a dose in-between prophylactic and therapeutic dosing, administered to all adults with ALL who were treated with L-asparaginase during induction chemotherapy. In this current study, we report data from patients who have been treated with this strategy from 2012 to present, focusing on the antithrombotic efficacy and safety of 1mg/kg/day LMWH in this population.

Methods

This retrospective chart review included 62 patients who received prophylactic anticoagulation with the LMWH enoxaparin (1mg/kg/day) while undergoing induction chemotherapy with L-asparaginase for ALL at the Oregon Health & Science University from 2012 to present. Anticoagulation with enoxaparin was initiated with the first dose of L-asparaginase and continued until the day of discharge or day 30 of induction. The primary outcome was the incidence of thrombosis within the first 30 days of L-asparaginase administration. Minor and major bleeding events, as defined by the International Society of Thrombosis and Haemostasis (ISTH), were recorded. Statistical analysis with univariate regression models was performed to evaluate the association of thrombotic events with demographic, disease and treatment variables.

Results

Sixty-two patients received 1mg/kg/day LMWH prophylaxis during ALL induction between January 2012 and June 2023 (43 with B-ALL and 19 with T-ALL). Median age at induction was 25.7 years (range 18-39 years). A majority of patients (83.9%) received the maximum dose of 2500mg/m^2 of L-asparaginase. Four patients (6.5%; 95% CI 1.8%-15.7%) experienced a thrombotic event within the first 30 days of induction with L-asparaginase; 3 of the events were catheter-associated and were treated supportively or with catheter removal, and 1 patient developed a distal lower extremity deep vein thrombosis related to myositis. Median time to thrombosis was 13.5 days (range 11-22 days). There were no significant associations between development of thrombotic events with age, gender, B- or T-cell precursor, or dose of L-asparaginase. No thrombosis-related deaths or major bleeding events occurred.

Conclusions

Prophylactic anticoagulation with intermediate dose 1mg/kg/day LMWH in adults with ALL undergoing induction chemotherapy with L-asparaginase is a safe and an effective strategy to prevent serious thrombotic events. Our institutional rate of 6.5% of patients experiencing thrombotic events during induction with L-asparaginase, with all of the events being clinically low risk, compares favorably to historically reported rates in adults and approaches the low rates reported in children. Further prospective research is warranted.

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