Anticoagulation Prophylaxis With Enoxaparin For Patients With Acute Lymphoblastic Leukemia Receiving Asparaginase-Based Intensification Therapy

Hassan Sibai1*, Jack T Seki, PharmD1,2*, Eshetu G Atenafu, MSc1*, Karen W.L. Yee, MD, FRCP2, Andre C Schuh, MD2, Vikas Gupta, MD, FRCP, FRCPath2, Mark D. Minden, MD, PhD2, Aaron D. Schimmer, MD, PhD2 and Joseph M. Brandwein, MD3

1. Princess Margaret Cancer Centre, UHN1 University of Toronto2, University of Alberta3

Background

- Venous thromboembolism (VTE) is a well-known complication in patients treated with asparaginase (ASP)-containing regimens
- Rate of VTE is several-fold higher in acute lymphoblastic leukemia (ALL) patients treated with ASP-containing regimens and appears higher in adults1.
- Optimal preventative strategy is unclear.

Objective

- To assess the safety and efficacy of low-dose low molecular weight heparin (LMWH) prophylaxis in adult patients with ALL treated with an ASP-based regimen in intensification phase.

Materials & Methods

- Adult ALL patients treated with DFCI 91-01 protocol2 in complete remission from 2009-2012; patients age 60 and over received a modified version.
- Patients who received at least 7 cycles (21 weeks) of the weekly ASP-based intensification phase with LMWH prophylaxis were evaluable for analysis.
- Patients treated with prior anticoagulation are excluded.

Results

- Enoxaparin given subcutaneously once daily starting Day 1 cycle 1 of intensification until end of 21-30 week intensification phase
- Dosing:
  - 40 mg (weight < 80 kg)
  - 60 mg (weight > 80 kg)
- Results compared to a historical cohort of consecutive patients treated with the same protocol prior to 2009, without anticoagulation prophylaxis.

- 41 evaluable patients who received enoxaparin prophylaxis.
- Historical cohort (n=99) did not significantly differ with respect to median age, weight and number of treatment cycles per patient.
- Mean enoxaparin dose administered was 0.62 mg/kg (range 0.39-1.05 mg/kg).
- Overall rate of VTE was not significantly different than the historical non-prophylaxis cohort (Table 1)
- Among patients receiving prophylaxis, there was a higher rate of VTE in patients who weighed > 80 kg, despite the higher enoxaparin dose used (p=0.036).
- VTE sites are summarized in Table 2
- There was no significant difference in the rate of VTE according to age or gender.
- No major bleeding complications observed in the prophylaxis group (minor bleeding rate was 3/41).

Conclusion

Prophylaxis with low-dose enoxaparin during the intensification phase was safe, but did not show a significant benefit in reducing the rate of VTE.

Patients with weight > 80 kg had higher rate of VTE despite prophylaxis with higher dose.

Prospective randomized studies are needed, using more intensive or novel prophylaxis strategies, in adult ALL patients treated with ASP-containing regimens.

Table 1. Overall rates of VTE between prophylaxis cohort and historical group

<table>
<thead>
<tr>
<th>Rate of VTE</th>
<th>No Prophylaxis (n=99)</th>
<th>Prophylaxis (n=41)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight &lt; 80 kg</td>
<td>18/67 (26.9%)</td>
<td>4/26 (15.3%)</td>
<td>0.19</td>
</tr>
<tr>
<td>Weight &gt; 80 kg</td>
<td>9/32 (28.1%)</td>
<td>7/15 (46.7%)</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Table 2. Sites of VTE in the prophylaxed group.

<table>
<thead>
<tr>
<th>VTE sites in prophylaxis cohort</th>
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VTE sites are summarized in Table 2

REFERENCE


AKNOWLEDGEMENT

We are grateful to Vivian Choy and her Outpatient Pharmacy staff for patient tracking and inventory management during this study

Disclosures: none to declare