INTRODUCTION

Background
- Adequate venous access is a vital aspect of caring for patients with hemophilia A (PwHA). In cases where peripheral venepuncture is not possible, central venous access devices (CVADs) facilitate the safe and effective infusion of factor concentrates.1
- However, the use of CVAD is associated with an increased risk of potential complications, the most frequent of which are infections and thrombosis. These complications increase morbidity and may have a detrimental impact on patient management.2

Study objective
- To evaluate the incidence of complications associated with CVADs in PwHA.

METHODS

Participants
- This retrospective cohort study was conducted using claims data from the US-based MarketScan Commercial Research Database.
- The study cohort comprised PwHA and included patients with ≥ 1 CVAD insertion claim and control patients with ≥ 1 CVAD insertion claim.
- Information on the patients’ baseline demographics and clinical characteristics was collected, including their Elixhauser comorbidity score, which is a measure of patient comorbidity based on ICD-9-CM and ICD-10 diagnosis codes found in administrative data.3

Analysis
- Hemophilia A (HA) was identified using a previously validated claims-based algorithm.4
- CVAD use and complications (all-cause infections, thrombosis, hematoma and mechanical failure) were identified using ICD-9-CM/ICD-10-CM diagnosis/procedure and current procedural terminology (CPT) codes.
- Incidence and rates of complications among CVAD cases were compared with controls (no evidence of CVAD use), and evaluated using Cox proportional-hazards models (adjusted for age, region, comorbidity score, and insurance type; Figure 1).

RESULTS

Patient demographics
- Baseline demographics and Elixhauser comorbidity score of the study cohort (N = 862), are shown in Table 1.

Table 1. Patient demographics and clinical characteristics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%), CVAD (n = 862)</th>
<th>CVAD (n = 61)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean±SD</td>
<td>25.9±1.7</td>
<td>4.7±5.3</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Male, n (%)</td>
<td>800 (99.9)</td>
<td>61 (100)</td>
<td>0.782</td>
</tr>
</tbody>
</table>

Health Plan Type, n (%)
- HMO: 122 (15.2) | 7 (11.5) | 0.428 |
- PPO: 542 (67.8) | 45 (73.8) | 0.334 |
- Other health plans: 136 (17.0) | 9 (14.8) | 0.654 |

Region of the USA, n (%)
- North east: 149 (18.6) | 5 (8.2) | 0.041 |
- South: 273 (34.1) | 19 (31.1) | 0.641 |
- North central: 204 (25.5) | 17 (27.9) | 0.679 |
- West: 165 (20.6) | 21 (34.9) | 0.053 |
- Unknown: 10 (1.25) | 1 (1.64) | 0.556 |

Elixhauser score, mean±SD
- CVAD, central venous access device; HMO, health maintenance organization; PPO, preferred provider organization.
- Sixty-one (7%) PwHA had evidence of CVAD use.

Table 2. CVAD specific outcomes by CVAD status.

<table>
<thead>
<tr>
<th>Variable, n (%)</th>
<th>No CVAD (n = 801)</th>
<th>CVAD (n = 61)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection</td>
<td>214 (26.70)</td>
<td>27 (44.30)</td>
<td>0.003</td>
</tr>
<tr>
<td>Thrombosis</td>
<td>9 (1.12)</td>
<td>8 (13.10)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mechanical failure</td>
<td>10 (1.25)</td>
<td>29 (13.10)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hematoma</td>
<td>12 (1.50)</td>
<td>0 (0.00)</td>
<td>1</td>
</tr>
</tbody>
</table>

Comparison of CVAD users vs controls

Infections
- In the post-index period, a significantly higher proportion of PwHA with CVADs vs controls had all-cause infections (44.3% vs 26.7%, p = 0.003).
- CVAD cases had a higher rate (hazard ratio [HR] = 2.3; 95% CI, 1.5–3.6) of all-cause infections compared with controls (Figure 2).

Mechanical failure
- A significantly higher proportion of PwHA with CVADs experienced mechanical failure vs controls in the post-index period (31.1% vs 1.25%; p < 0.001).
- Mechanical failure was more common (HR = 7.9; 95% CI, 2.3–25.6) in CVAD cases vs controls (Figure 4).

CONCLUSIONS

DISCLOSURES

REFERENCES


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Complications associated with central venous access devices in patients with hemophilia A: a secondary claims-based analysis

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Figure 1. Analysis design.

Figure 2. Cumulative hazard of infection by CVAD status.

Figure 3. Cumulative hazard of thrombosis by CVAD status.

Figure 4. Cumulative hazard of mechanical failure by CVAD status.

Figure 5. Composite AE score.

Table 1. Patient demographics and clinical characteristics.

Table 2. CVAD specific outcomes by CVAD status.

Table 3. Comparison of CVAD users vs controls in the post-index period.