The Value of sPESI for Risk Stratification in Patients with Pulmonary Embolism

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RESULTS (cont’d)

During the 90-day follow-up period, LRPE patients had:

- fewer PE-related outcomes, including recurrent VTE, major bleeding, or death (Table 1);
- fewer inpatient, outpatient, and pharmacy visits per patient (Figure 2); and
- lower health care costs (Figure 3).

OBJECTIVES

Assess PE patients in the Veterans Health Administration (VHA) population using the sPESI score as a risk-stratification method.

METHODS

Data Source
- VHA Medical SAS Administrative Database from 01OCT2010-30SEP2015

Sample Selection

Figure 1. Patient Selection Criteria

Aged ≥18 years with ≥1 diagnosis for index PE (412.9-CM-412.1, 412.11, 412.15-412.19 during index period [01OCT2010-30SEP2015]); not index PE discharge date was used for the index date (N=18,038).

Continuous health plan enrollment ≥6 months pre-index date, including hospital stay (baseline period) and enrol in both 60-days post index date or death (follow-up period) (N=10,590).

METHODS

- Pulmonary embolism (PE) is responsible for 300,000 US deaths each year. Initial PE-related hospitalization costs have been estimated at $13,300-$31,000 annually.
- The key to effective treatment lies in appropriate risk stratification, where low-risk PE (LRPE) patients can benefit from abbreviated hospital stays or outpatient therapy, which could substantially reduce the clinical and economic disease burden.
- Several risk-stratification algorithms have been developed, including the Geneva score, the Pulmonary Embolism Severity Index (PESI) score, the simplified PESI (sPESI) score, the Spanish score, the Davis criteria, the Home management exclusion criteria, and the Hestia criteria.
- Current data is limited regarding the use of the sPESI score for risk stratification.

OUTCOME MEASURES

- Hospital-acquired complications (HACs) during index hospitalization included any of the following, using pre-specified ICD-9-CM codes: catheter-associated urinary tract infection, methicillin-resistant Staphylococcus aureus, Clostridium difficile infection, hospital-acquired bacterial pneumonia, foreign object retained after surgery, air embolism, blood incompatibility, pressure ulcer (stages III & IV), trauma/injury, procedure-related, poor glycemic control, iatrogenic pneumothorax with venous catheterization, vascular catheter-associated infection, or surgical site infection. Any condition with no patient was omitted.
- PE-related outcomes (recurrent venous thromboembolism [VTE], major bleeding, or death) as well as all-cause health care resource utilization and costs (inpatient stays, outpatient visits, and other services) during the 90-day follow-up period.

Statistical Analysis
- Descriptive statistics were provided for all study variables.
- Chi-square tests were for categorical variables.
- Student t-tests were used for continuous variables.

RESULTS

Total: 6,746 PE patients
- 4,828 LRPE patients
- 1,918 HRPE patients (Figure 1)

Baseline Demographic and Clinical Characteristics

In this VHA sample, most patients were male (6434; 95.38%) and either white (4565; 67.67%) or black (1486; 22.03%). HRPE patients were more likely to have higher Charlson comorbidity criteria.

Descriptive statistics were provided for all study variables.

<table>
<thead>
<tr>
<th>HRPE Cohort</th>
<th>LRPE Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>%</td>
</tr>
<tr>
<td>Outcome during the index hospitalization</td>
<td></td>
</tr>
<tr>
<td>Hospital-acquired complications</td>
<td>10%</td>
</tr>
<tr>
<td>Catheter-associated Urinary Tract Infection</td>
<td>0.4%</td>
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<tr>
<td>Medication error (anticoagulant adverse event)</td>
<td>1.3%</td>
</tr>
<tr>
<td>Catheter-related Infection</td>
<td>0.3%</td>
</tr>
<tr>
<td>Nosocomial Acquired Methicillin-resistant Staphylococcus Aureus</td>
<td>0.0%</td>
</tr>
<tr>
<td>Nosocomial Pneumonia</td>
<td>3.2%</td>
</tr>
<tr>
<td>Pressure Ulcer (Stage III &amp; IV)</td>
<td>2.5%</td>
</tr>
<tr>
<td>Prior Anticoagulant</td>
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<tr>
<td>Iatrogenic Pneumothorax with Venous Catheterization</td>
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</tr>
<tr>
<td>Vascular Catheter-associated Infection</td>
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<tr>
<td>Surgical Site Infection</td>
<td>0.0%</td>
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<tr>
<td>Blood transfusion</td>
<td>6.0%</td>
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<tr>
<td>Inpatient Length of stay (in days)</td>
<td>10.0</td>
</tr>
<tr>
<td>Time to first VTE, days</td>
<td>24.0</td>
</tr>
<tr>
<td>Time to major bleeding, days</td>
<td>24.0</td>
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<tr>
<td>Time to death, days</td>
<td>30.0</td>
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</tbody>
</table>

Table 1. Hospital-acquired Complications and PE-related Outcomes among LRPE vs HRPE Patients

Figure 2. Health Care Utilization among LRPE vs HRPE Patients during the 90-day Follow-up Period

Figure 3. Health Care Costs among LRPE vs HRPE Patients during the 90-day Follow-up Period

LIMITATIONS

- Inherent limitations of source administrative claims data exist.
- Anticoagulant claims during hospitalization were required to remove rule-out PE diagnoses.
- Only US data from a specific subpopulation were included; general applicability requires further study.

CONCLUSIONS

Using the sPESI score, LRPE patients had lower clinical and economic burden than HRPE patients.

DISCLOSURES

This research was funded by Janssen Scientific Affairs, LLC (Raleigh, N.J.).