RISK STRATIFICATION OF PULMONARY EMBOLISM

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Which of the following are associated with poor outcomes in a patient presenting with pulmonary embolism?

A. Systolic Blood Pressure < 100 mm hg
B. Altered mental status
C. Pulse rate > 110/min
D. Respiratory Rate > 30/min
E. All of the Above

European Society of Cardiology Guidelines for Diagnosis and Management of Pulmonary Embolism 2014

Clinical Risk Stratification

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European Society of Cardiology Guidelines for Diagnosis and Management of Pulmonary Embolism 2014
From: Simplification of the Pulmonary Embolism Severity Index for Prognostication in Patients With Acute Symptomatic Pulmonary Embolism

Table Title: Original and Simplified PESI Prediction Rule Characteristics for 30-Day Mortality in This Study's Derivation Cohort

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Original PESI</th>
<th>Simplified PESI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity (%)</td>
<td>80.3 (95% CI 76.0-84.2)</td>
<td>80.0 (95% CI 75.7-84.1)</td>
</tr>
<tr>
<td>Specificity (%)</td>
<td>74.6 (95% CI 70.1-78.7)</td>
<td>74.3 (95% CI 69.7-78.4)</td>
</tr>
<tr>
<td>Positive predictive value (%)</td>
<td>67.4 (95% CI 60.4-74.0)</td>
<td>66.9 (95% CI 59.2-74.3)</td>
</tr>
<tr>
<td>Negative predictive value (%)</td>
<td>89.4 (95% CI 84.1-93.8)</td>
<td>89.2 (95% CI 83.6-93.8)</td>
</tr>
<tr>
<td>Risk strata</td>
<td>Low: 1, High: 2</td>
<td></td>
</tr>
</tbody>
</table>

Kaplan-Meier 30-day all-cause mortality of positive and negative simplified pulmonary embolism severity index (sPESI) high (—) and low-risk (---) groups.


CT imaging for risk stratification for pulmonary embolism


THE SIMPLIFIED PULMONARY EMBOLISM SEVERITY INDEX (PESI): VALIDATION OF A CLINICAL PROGNOSTIC MODEL FOR PULMONARY EMBOLISM

Righini et al. Journal of Thrombosis and Haemostasis 2011 (10): 2115-2117

Measurement of right ventricular dilatation at multidetector computed tomography.  Different degrees were measured on multiplanar reformation and represented as the distance between the right ventricular free wall and the interventricular septum. RV, right ventricle; LV, left ventricle.
Forest plots for death at 30 days in haemodynamically stable patients.

From: Prognostic Role of Echocardiography Among Patients With Acute Pulmonary Embolism and a Systolic Arterial Pressure of 90 mm Hg or Higher

RISK STRATIFICATION BY ECHOCARDIOGRAPHY

RISK STRATIFICATION BY BIOMARKERS

Biomarker-based risk assessment model in acute pulmonary embolism

The JAMA Network

Prognostic Role of Echocardiography Among Patients With Acute Pulmonary Embolism and a Systolic Arterial Pressure of 90 mm Hg or Higher
OTHER BIOMARKERS STUDIED IN PULMONARY EMBOLISM

- H-FABP: Heart Type Fatty Acid Binding protein
- Copeptin
- Creatinine
- D- dimer


COMBINING BIOMARKERS, CLINICAL MARKERS AND IMAGING

MODIFIED FAST SCORE

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-FABP ≥ 6 ng/ml</td>
<td>1.5</td>
</tr>
<tr>
<td>Syncope</td>
<td>1.5</td>
</tr>
<tr>
<td>Tachycardia</td>
<td>2</td>
</tr>
<tr>
<td>Cut-off value</td>
<td>≥3</td>
</tr>
</tbody>
</table>

Abbreviations: FAST, H-FABP, syncope, and tachycardia; H-FABP, heart-type fatty acid-binding protein.

Current guidelines support reperfusion therapy for which of the following patients with pulmonary embolism?

A. A 75 year old man presenting with shortness of breath, elevated BNP and troponin T
B. An 80 year old woman with subsegmental pulmonary emboli who is asymptomatic
C. A 60 year old man presenting with SBP 85 mmhg, lactic acidosis and acute renal failure
D. A 20 year old man who presents with hypoxemia requiring mechanical ventilation and RV dilation on echocardiogram
E. A 56 year old woman with saddle pulmonary embolism with a BP of 110/65 mm Hg and on supplemental oxygen via a non rebreather mask