



Effectiveness of Tenecteplase Compared with Streptokinase and Heparin in the Treatment of Pulmonary Embolism of Varied Severity: A Retrospective Analysis

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Abstract

Background: Thrombolytics are recommended in high risk patients with massive pulmonary embolism (PE). However, clinical practice seems to be far different and questions related to its utility in lesser severe patients remain subject of investigation. The objective of this retrospective study was to compare the efficacy and safety of tenecteplase with streptokinase and heparin.

Method: A total of 103 patients (tenecteplase: 62, streptokinase: 17, heparin: 24) diagnosed with PE (massive: 33[32.04%], submassive: 50[48.54%] and minor: 20[19.42%]) were included.

Results: Mean age was 50.04 years and major risk factors were immobilization due to hospitalization, history of deep vein thrombosis and diabetes. Common clinical symptoms of dyspnoea, right ventricular dysfunction and cough were found in 94.17, 81.55 and 77.67% patients, respectively. Between treatment and day 7 death occurred in 4.84, 5.88 and 8.33% patients in the tenecteplase, streptokinase and heparin group, respectively. The difference between treatment group was nonsignificant ($p > 0.05$). All treatment have shown significant alleviation in the dyspnoea and heart rate ($p < 0.05$). Significant ($p < 0.05$) increase in the oxygen saturation was seen and it was markedly higher in the tenecteplase treated patients compared with the streptokinase and heparin. By day 7, there was 100% resolution of right bundle branch block only in the tenecteplase group. No intracranial bleeding or fatal bleeding episode was found in either group.

Conclusion: Tenecteplase was found to be effective in patients with PE irrespective of their clinical status and no major adverse events were noted.

Keywords: Thrombolytics; Pulmonary embolism; Tenecteplase; Heparin; Streptokinase

Introduction

Pulmonary embolism (PE) is a well-recognised common life threatening condition that is often difficult to detect. It is the most serious clinical presentation of venous thromboembolism and in majority of cases is the consequence of deep vein thrombosis [1]. Direct obstruction or occlusion of the pulmonary arteries and release of potent vasoconstrictors leads to quick rise in pulmonary vascular resistance. Due to this right ventricular (RV) contractile function is compromised and ensues its failure. This vicious cycle of cardiogenic shock is augmented by concomitant hypoxia, which inevitably leads to cardiovascular collapse and death [2,3].

The global incidence of PE is estimated to be 60- 70 per 100,000 of the general population and ranks third among the most common types of cardiovascular disease [4,5]. The mortality rate is 8-10% in treated patient and is as high as 25-30% in untreated patients [6]. Nearly 25% of patients die within the first hours of presentation and the actual figures can be even higher as patients who die before diagnosis usually do not get accounted [7]. Associated with significant morbidity and mortality, early diagnosis and timely treatment is of paramount importance to ensure the highest quality of care.

Appropriate treatment regimen can be best selected using risk stratification primarily by assessing hemodynamic impact, extent of PE, the patient's clinical status and potential risks of the therapy [5]. Depending on PE presentation i.e. submassive (25%-50% obstruction), massive (>50% obstruction) or minor, initial treatment is primarily focused on restoring adequate blood flow through the pulmonary bed reversing RV failure and preventing PE recurrence [8].

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