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Successful Treatment of Massive Pulmonary Embolism with Reteplase (Case Report and Review of Litreture)

Dr. Surendra Singh[1], Dr. Mayank Sarawag[2], Dr. Seetaram Mali[3]

[1]P.G. Resident Department of Medicine, Jhalawar Medical College, Jhalawar
[2]Prof. and HOD, Department of Medicine, Jhalawar Medical College, JhalawarS.R.
[3]Department of Medicine, Jhalawar Medical College, Jhalawar

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Corresponding author: Dr. Surendra Singh
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Abstract

Massive Pulmonary Thromboembolism (PTE) has an increased risk of mortality. Thrombolytic therapy is the accepted treatment. Reteplase, a variant of tissue plasminogen activator, has been used in acute myocardial infarction with acceptable safety and efficacy, but studies in massive PTE are rare. In this study we report single case of successful treatment of massive PTE with reteplase.

Introduction

Acute pulmonary embolism (APE) is the third leading cause of death from a cardiovascular cause, behind acute myocardial infarction and cerebrovascular accidents[1]. Pulmonary embolism should be suspected in all patients who present with new or worsening dyspnea, chest pain, or sustained hypotension without an alternative obvious cause. However, the diagnosis is confirmed by objective testing in only about 20% of patients[2]. If there is a high suspicion of massive pulmonary embolism, thrombolytic treatment is strongly advised for short-term survival and the long-term prognosis.

Reteplase is easy to use to treat a hemodynamically unstable, massive pulmonary embolism.

Case Report

A 48 year-old male patient was admitted to the emergency service with chief complain of shortness of breath from last 5 days and chest pain from last 2 days. On examination patient's vitals were pulse rate around 130 BPM, respiratory rate 24 per minute, B.P. 90/60 mm of Hg in supine position, oxygen saturation 85% on room air, distended neck veins present and ECG findings were Sinus tachycardia and S1Q3T3 pattern. Patient relayed the information that he is known case of Deep Venous Thrombosis last 5 yrs. Pt. had history of tobacoo chewing and occasional alcohol consumption. In light of the patient past history and clinical features it was thought that pulmonary embolism was the most probable diagnosis .Diagnosis was confirmed by echocardiography and CT Pulmonary angiography .Echocardiography findings revealed dilatation of the right heart chambers with right ventricular wall motion abnormality and, CT pulmonary angiography was showing non enhancing filling defects in the bilateral right and left pulmonary arteries and join at their confluence as well further extending into upper and lower branches and segmental branch of right lower lobe with saddle thrombus .After confirmation of diagnosis Reteplase , a third generation thrombolytic agent was given intravenously . Reteplase was given in form of 2 separate bolus injections of 10 IU 30 minutes apart. His symptoms were relieved and patient discharged

after 1 week of hospitalization. Anticoagulation with rivaroxaban 15 mg BD for 3 weeks followed by 20 mg OD given. Follow-up 2D Echo examinations demonstrated that the right ventricular dilatation and dysfunction had receded.

Discussion

Acute PE is a frequent disease still associated with high in-hospital mortality and acute as well as long-term morbidity[3,4 5]. Venous thromboembolism (VTE), which encompasses deep vein thrombosis (DVT) and its most dangerous complication, massive pulmonary thromboembolism (PE), represents a major threat to the health, the well-being, and occasionally, the lives of a large number of patients worldwide. Incidence of VTE varies from 0.5 to 2 per one thousand inhabitants[6].The exact incidence of PE remains unknown, as it may go undetected in 40-50 % of patient with DVT[14]. The annual incidence rate of VTE ranges between 75 and 269 cases per 100,000 persons, as shown by studies in Western Europe, North America, Australia, and southern Latin America, with subjects 70 years of age or older having an incidence of up to 700 per 100,000[7]. There are limited data regard to PE, its management and associated complications in india. It is an emergency with relatively nonspecific clinical symptoms. Thus, patient's signs and symptoms as well as overall prognosis[8-10].

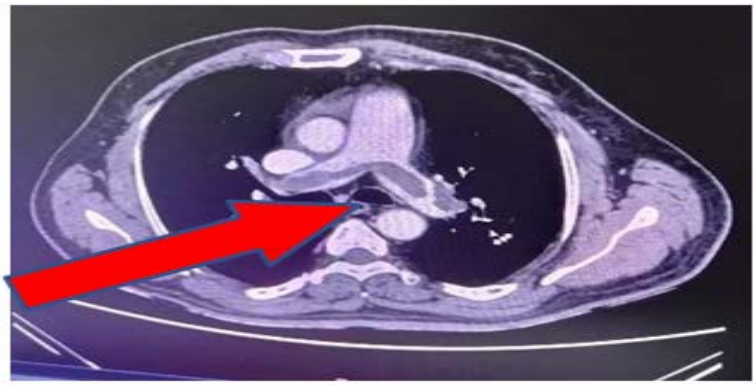

Figure 1: Thoraxic computerized tomography with a contrast agent injection revealed a blood clot in the right and left pulmonary arteries

Computed tomography pulmonary angiography (CTPA) is the gold standard imaging test for the detection of patients with suspected acute PE through visualization of the pulmonary filling defect.[11-13] Thrombolysis is the treatment of choice for high risk(or massive) APE, in low risk APE anticoagulation alone is recommended by the most recent international consensus. Thrombolysis rapidly dissolves and reduces thrombus burden, thereby improving hemodynamics, gas exchange and overall survival. Reteplase is a third generation fibrin-specific recombinant tissue plasminogen activator that lacks the finger, epidermal growth factor, and kringle 1 domains[15].The slower clearance resulting from these changes in molecular structure allows reteplase to be given as a nonweight-adjusted bolus[16]. Thrombolytic treatment is known to carry a risk of major bleeding, including intracranial hemorrhage. There is no stroke or intracranial bleeding reported with the use of reteplase.

Figure 2: Thoracic computerized tomography with contrast agents after reteplase injection

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