TRIDHA
Journal of Clinical Cases & Reports
Volume 2023, Issue S14, 3 pages
https://doi.org/10.46619/joccr.2023.6-S14.1079

SHORT COMMUNICATION

Obstructive Shock Pulmonary Embolism: Catheter Directed Thrombolysis

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Received: 28 February 2023; Accepted: 10 March 2023; Published: 17 March 2023

ABSTRACT

Venous thromboembolism is one of the most frequently encountered condition for which patients need intensive care admission often. Most of the time patients presents with shock and hemodynamic instability if it is massive pulmonary embolism. Incidence of Vte is comparable to western population in India, studies conducted by Ayyapan et all say it around 20/10,000 admission. Studies showed higher mortality of around 50% in high risk (massive) and mortality of around 14% in intermediate risk (sub-massive) PE which necessitating more aggressive approach in high-risk groups. Rapid administration of systemic thrombolytic agents is indicated in massive pulmonary embolism patients who presents with hemodynamic instability but systemic thrombolytic therapy is associated with risk of major bleeding around 20% and haemorrhagic stroke of 2% to 5% . During systemic thrombolysis shunting of thrombolytic agents away from clot into the systemic circulation which makes it failed lysis sometimes along with major bleeding.

KEYWORDS

Venous thromboembolism; Pulmonary embolism; Systemic thrombolytic therapy; Haemorrhagic stroke

INTRODUCTION

Catheter directed thrombolysis is one of the newest options in massive and sub massive pulmonary embolism with hemodynamic instability. The major benefit of CDT is profound reduction in the amount of thrombolytic agent used and more efficacious as it is injected near the thrombus. Currently, CDT is a class 2C recommendation by the American College of Chest Physicians for the management of acute PE associated with hypotension and who have contraindications to thrombolysis, failed thrombolysis, or shock that is likely to cause death before systemic thrombolysis can take effect (e.g., within hours), and if appropriate expertise and resources are available [1]. We report our case of massive pulmonary embolism who benefitted catheter thrombolysis. She was a young 19-years old college going student who presented with cough with haemoptysis for 2 days. She was diagnosed to have right leg DVT one year ago for which she was started on dabigatran by general practitioner. She stopped anticoagulant

for three months before this current admission and she didn't follow up with her general practitioner. She presented with orthopnoea, hypoxemia, hypotension. On arrival her bp 70/50 mmhg, spo_2 90 percent in room air, respiratory rate 38/minutes. Her bp improved to 90/60 with nor adrenalin 0.2 mic/kg/min. Her spo_2 improved to 97 percent with oxygen 5 L/minutes. Her CTPA showed right main pulmonary artery thrombus with clot score of 70 percent. Her platelets on admission was 60,000. Her bedside echo cardiography showed features of RV dysfunction, RA and RV dilatation, shifting of interventricular septum towards left, rv/lv ratio of more than 1 and RVSP of more than 80 mmhg. Her venogram shower left leg chronic DVT extending from common femoral vein to iliac vein. Right femora popliteal DVT. As her platelets were low haematologist opinion, cardiologist and interventional radiologist opinion was obtained and started on injection Clexane 60 mg bd. As she had high risk pulmonary pe with hemodynamic instability CDT was planned considering her high risk of bleeding. She was taken to Cath lab. Under fluoroscopic guidance catheter was introduced through the right common femoral vein into the main pulmonary artery and then into the right main pulmonary artery. Injection Tenecteplase 10 mg was given near the clot and then she was placed IVC filter in the same sitting considering her high thrombus load in her legs and poor compliance of medication. Procedure was uneventful. She had bradycardia which was treated with orciprenaline. Bradycardia improved over a period of 48 hours. She complained of headache after 6 hrs of procedure. She was done urgent CT brain which showed no ich, no ischemia. Her headache responded to analgesics. She was weaned of NA and oxygen support over a period of another 24 hours to 48 hours. Her follow up echo 24 hours later showed reduction in RVSP of 45 mmhg, rv/lv ratio improved to less than 1. Her APLA, anti DS DNA, was positive. Her platelet count improved with steroids. She was started on oral rivaroxaban 15 mg bd for 3 weeks and advised not to discontinue her oral anticoagulant without doctors' advice. She was discharged on 10^{th} day of admission.

Several large studies have investigated the use of CDT for PE. For example, the 2014 PEITHO trial showed an increase in major bleeding, including stroke, during their investigation of Tenecteplase versus unfractionated heparin (UFH) in the intermediate-risk population [2]. However, the 2015 PERFECT trial reported that CDT has a lower risk of bleeding compared to conventional systemic therapy [2]. The 2014 ULTIMA trial was a randomized control trial that compared ultrasound-assisted CDT to intravenous (IV) heparin in the intermediate-risk population. They concluded that CDT was superior to anticoagulation in reversing right ventricular (RV) dilatation in this population. They also reported no increased bleeding risk or mortality at 90 days [3]. The 2015 SEATLE II study was a prospective multicentre study that revealed that ultrasound-guided catheter-directed, low-dose thrombolysis decreased right ventricular dilation, lessened pulmonary hypertension, reduced clot burden, and minimized intracranial bleeding in acute massive and sub massive PE [4]. our patient presented with massive pulmonary embolism as she had hemodynamic instability but considering her risk of bleeding systemic thrombolysis was deferred and CDT was considered.

Though CDT associated with less risk of bleeding still CDT cannot be performed to whom having higher risk of bleeding with a prior ischemic stroke, cerebral bleed, cerebral mass, vascular deformation, recent ulcer in the gastrointestinal tract, recent brain/spine surgery, major abdominal or pelvic surgery, or any source of active bleeding are not considered candidates for CDT therapy., Dose adjustments are made for patients with moderate risk for bleeding to prevent these such complications.

CONCLUSION

CDT is one of the newest options of delivering thrombolytic agents still larger randomised trials comparing systemic thrombolysis verses CDT are needed to confirm its superiority and efficacy over systemic thrombolysis.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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