Concurrent Mobile and In-Situ types of Right-sided Heart Thrombi: a rare case report

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Abstract

- **Introduction:** Right-sided Heart Thrombi (RHT) is detected by trans-thoracic echocardiography but coexistence of mobile and broad-based In-Situ thrombosis is a rare presentation.

- **Case presentation:** We present a case of right atrial thrombosis in a 71 years old Caucasian man with history of cor pulmonale who referred with tachypnea and dyspnea to the emergency department. The anticoagulant therapy with heparin was ineffective, so the patient undergone thrombolytic therapy with Streptokinase which resulted in disappearing the clots and the patient was discharged from the hospital with a stable condition.

- **Conclusion:** RHT is a life-threatening condition that needs an immediate therapy. Generally, Thrombolysis considered as the treatment of choice but the treatment selection remains controversial and requires further prospective studies.
INTRODUCTION

Right heart thrombi (RHT) is a rare condition that has some etiologies including the migration of clots from systemic veins, central venous catheter, hemodialysis, Behçet’s disease and cancer related hypercoagulable state [1]. RHT considered as an emergent condition due to its high rate of mortality. Its in-hospital mortality is reported to be almost 50% [2]. Owing to the increased use of Trans-Thoracic Echocardiography (TTE), the detection of RHT has been raised recently. Nowadays the echocardiographic examination is used as a modality for screening, diagnosis and follow up of therapy [1, 3].

In this article, we report a case of RHT with concurrent mobile and fixed thrombosis in the right atrium. To our best knowledge, this is the first report of coexistence of two different types of RHT.

CASE PRESENTATION

A 71 years old man with history of Chronic Obstructive Pulmonary Disease (COPD) since 15 years ago was referred to the Emergency Department of our hospital with tachypnea and dyspnea along with exacerbated coughs since 10 days ago. The patient was cyanotic with a Blood Pressure of 100/80 mm Hg, pulse rate of 90 beats per minute, respiratory rate of 28 breaths per minute and Body Temperature of 36.8° C axillary. Other remarkable findings on physical examination were listed below:

Bilateral coarse crackle & wheezing was heard on auscultation. A loud P2 and grade 2/6 systolic murmur was audible along the lower sternal border. Jugular vein distention, ascites, and bilateral lower limbs edema were also observed in physical examination. The arterial blood gas evaluation revealed a respiratory acidosis. Electrocardiogram (ECG) had sinus rhythm and was suggestive for right ventricular hypertrophy. The Chest X-ray demonstrated hyperinflation in both lungs. The color Doppler ultrasonography of the lower limbs did not find any sign of deep vein thrombosis (DVT). The serum D-Dimer level was normal as well.

Then Trans-Thoracic Echocardiography (TTE) was implemented which revealed an ejection fraction (EF) of 50-55%, an increased size of right ventricle and right ventricle dysfunction with smokey pattern. Several intracardiac masses was observed in the right atrium as well as around the orifice of inferior vena cava which the largest one was a 2.7 × 1.8 cm highly mobile mass with a narrow stalk, but the other smaller ones were fixed. Systolic Pulmonary Artery Pressure (PAP) of 85 mmHg was estimated on the basis of Doppler echocardiography. Since the patient refused to undergo further trans-esophageal echocardiographic (TEE) evaluation, we performed a Spiral Computerized Tomographic scan to detect an evidence for any probable pulmonary
embolism (PE), however the CT did not confirm the existence of PE. The anticoagulation with heparin infusion was initiated for the patient, but was ineffective, and the clots remained unchanged on TTE one week later. Then, the patient received immediately thrombolytic therapy (TT) with Streptokinase infusion for 36 hours and TTE demonstrated no sign of clots. Patient was discharged from the hospital with a good condition.

**DISCUSSION**

Right heart thrombosis is a phenomenon which is highly associated with pulmonary embolism. There are three type of RHT: 1) Floating thrombosis in transit from legs to the pulmonary arteries which often passes through tricuspid or pulmonic valves or patent foramen ovale during the cardiac cycle; 2) Immobile In Situ thrombosis which is adherent to the cardiac wall, and 3) mobile In-Situ thrombosis with a stalk and a thin point of attachment to the wall. Each type of RHT have different prognosis: the first type is associated with high incidence of PE and has the worst prognosis. In the counterpart, type2 has a good prognosis, and the third type has an intermediate risk & prognosis, which placed between two other types [4]. In our case, concurrent existence of two types of the RHT is a rare feature that may have different prognosis and therefore may need different management compared to the presence of each type solely (figure 1).

RHT, especially the mobile type, is associated with high mortality risk, and needs immediate therapy. Treatment options include conservative methods such as anticoagulation or thrombolysis beside the invasive interventional and surgical methods [2, 5]. In the absence of sufficient controlled trials, the optimal treatment in each type of RHT remained controversial [3]. Anticoagulation alone with Heparin seems to be less effective in the cases with imminent risk of PE [6], however this option was ineffective in our case, too. According to the majority of reports, thrombolysis is an effective and widely available option that could be suggested as the first choice for treatment of RHT [1, 7], but its complications including the risk of hemorrhage or mobilization of clots [8, 9], should be considered as well. If anticoagulation and thrombolysis failed to treat RHT, the invasive options are the next step [1]. Nevertheless, the surgery is the classic therapy of RHT. Interventional procedure is the last option, if the above-mentioned therapies are contraindicated or not applicable [2].

Moreover the therapy should be selected at the same time according to the patients’ best will as well as the physician’s clinical judgment. Finally, the authors recommend a well-designed, multi-center study including all cases of RHT with different treatment choices to be implemented.

**Conclusion**
RHT is an emergent condition that needs an immediate therapy. Thrombolysis considered as the treatment of choice, especially when the patient couldn’t be scheduled to have a surgery. The surgery may be another first-line option if the setting is appropriate for performing surgery.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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Authors’ contributions

AR and KK were members of the attending team. YR and NS helped in the literature research, copyediting, literature review, manuscript writing and correcting. AR was head of the department and performed the final control of the paper. All authors have read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

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**Figure 1-Apical four chambers view.** Mobile clot (above arrow) and fixed clots (below arrow)