

Giant Mass in The Right Atrium Originating from The Superior Vena Cava: An Interesting Case Report

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ABSTRACT

Superior vena cava thrombosis with its extension into the right heart chambers can be commonly seen in the presence of chronically inserted catheters, coagulation disorders, malignancy, deep venous thrombosis (DVT), obesity, pregnancy, or trauma. Right atrial thrombi generally forms on injured endothelium due to implanted devices or foreign bodies, including tumors, pacemakers, and chronic right atrial catheters like triple-lumen catheters used for hemodialysis, giving chemotherapy, intravenous fluids or parenteral nutrition. It can lead to severe consequences, which may result in pulmonary or septic embolism and even systemic embolization as seen in the case of an atrial septal defect or patent foramen ovale. We report a case of a 49-year-old female who presented with complaints of mild to moderate dyspnea for 1 month with a past history of DVT and pulmonary embolism. She has undergone a gastric band procedure. Her imaging studies revealed a 42 x 20 mm intraluminal lesion within the Superior Vena Cava (SVC) extending into the right atrium. The patient's huge mass was removed by surgery, and pathological evaluation confirmed it to be thrombosis.

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Introduction

Thrombosis occurring in the Superior Vena Cava (SVC) with its extension into the Right Atrium (RA) is a rare phenomenon. This is due to the fact that the right atrial appendage is more shallow than the left atrial appendage (1). Gilon et al. noted that the incidence of right heart thrombus is around 12.5% and it can result from causes like chronic indwelling catheters, coagulation disorders, malignancies, deep venous thrombosis (DVT), obesity, pregnancy, or trauma (2). Transthoracic echocardiography (TTE) is the hallmark for the diagnosis of RA thrombi, but

it is invasive and costly. Other important investigations include echocardiography and an MRI scan.

Management options include surgical embolectomy, thrombolysis, catheter-directed thrombolysis, and anticoagulation (3). We report a case of a 49-year-old female who presented with dyspnea with a past history of DVT and pulmonary embolism with a massive right atrial thrombosis.

Case Report

A 49-year old obese female with complaints of dyspnea grade III, B/L pedal edema, cough, weakness, and headache presented to our

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hospital. She had a past history of pulmonary thromboembolism (PTE) and DVT three years ago, which were managed with anticoagulants. Her past surgical history includes laparoscopic cholecystectomy, gastric banding, and umbilical hernia repair. On examination, there was b/l pedal edema, and all other parameters were within normal limits (WNL). Her routine blood investigations were within normal limits; D-dimer: 0.75, CPK: 42, and CPK-MB: 09.

Her chest X-ray was within normal limits, and 2D-echo showed a moderate-size mass (thrombus) of size 40.9 * 16.4 mm moving freely in the right atrium (RA). The size of the right atrium and left ventricle chambers is normal, with an ejection fraction of 60%. Her MRI report showed an intraluminal thrombus of size: 42 * 20 mm within the SVC, extending from the RA-SVC junction. The main pulmonary artery is normal, and no filling defects are seen in the MPA or branch vessels (Figure 1). The mass was removed by a midline sternotomy with moderate hypothermic cardiopulmonary bypass. A thrombus of around 5 cm was removed from the RA-SVC junction (Figure 2). Postoperative recovery was uneventful. Histopathology reports were consistent with the diagnosis of a thrombus. The patient had an uneventful postoperative outcome.

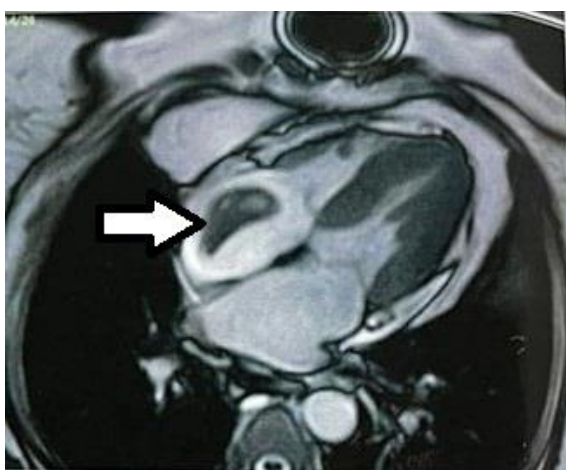


Figure 1. Cardiac MRI shows an intraluminal thrombus within the SVC, extending from the RA-SVC junction, of size: 42*20 mm.



Figure 2. Intraoperatively extracted thrombus from SVC-RA of approximate size 42*22 mm.

Discussion

The incidence of right atrium masses is unknown, and they are rare in occurrence. They are associated with high mortality because of the associated complications of pulmonary thromboembolism (4). The prevalence of RA thrombi found after doing 23,796 autopsies was 7%, similar to the prevalence of left cardiac thrombi, which was reported from the Sweden review (5). They are classified as 1. Type A- Thrombi which are highly mobile and serpiginous which may prolapse through the tricuspid valve, and they are associated with deep vein thrombosis and pulmonary embolism. 2. Type B- Thrombi are attached to the right atrial or ventricular wall and are less mobile and Type C- Thrombi are highly mobile, with appearance similar to a myxoma but are rare (6). The pathogenesis of thrombus depends on three factors as per virchows which includes: stasis of blood, hypercoagulable states, and endothelial damage. Indwelling catheters might cause endothelial damage and form thrombus that adheres to the catheter tip or endocardium. Right atrial thrombus is rare but are associated with the most fatal complication of pulmonary

embolism (7). Right atrial thrombus can be detected by transthoracic echocardiography and other investigations, including a 2D echo and cardiac MRI. Several treatment options are available, which include anticoagulation, thrombolysis, and surgical embolectomy. The gold standard treatment is surgical embolectomy under cardiopulmonary bypass with exploration of the right chambers and the pulmonary arteries (4). There are various treatment options which includes anticoagulation, systemic thrombolysis, and surgical embolectomy. The optimal therapeutic approach is still a debatable subject. As per the European Cooperative Study, the mortality rate for anticoagulated patients was 60%, those treated with thrombolytics were 40% those submitted to surgical procedures were 27%, which suggests the surgical approach is the most effective mode of treatment (8). Athappan et al. in 2015 published the largest meta-analysis. The study showed to have 328 patients, amongst which 70 received anticoagulation, 122 were thrombolysed, and 120 underwent surgical embolectomy. The highest mortality rates (90.9%) were reported in patients who had no treatment. The mortality associated with anticoagulation alone was significantly higher than that associated with thrombolysis or embolectomy (37.1% vs. 18.3% vs. 13.7%, respectively). In hemodynamically unstable patients, survival probability was higher in patients who received thrombolysis (81.5%) than in patients treated with surgical embolectomy (70.45%), and both were higher than anticoagulation alone (47.7%) (9). Right atrial thromboses can be fatal due to pulmonary embolism risk, so prompt diagnosis is needed, and surgical embolectomy remains the gold standard treatment.

Conclusion

A huge SVC thrombosis can give rise to major complications if not diagnosed promptly and requires major surgical intervention. Hence, a closed follow-up of the

patients with a past history of thromboembolism is advisable in order to prevent further complications as seen in the case.

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