Case Report

Right Atrio-Ventricular Thrombus Masquerading as Myxoma

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Abstract:

Intra-cardiac thrombus is an important pathological condition due to its potentially fatal complications. Thrombus in the right side of the heart is a relativley uncommon event and most are coincidentally discovered during the autopsy. Intra-cardiac causes of thrombus development include atrial fibrillation, valvular diseases, blood stasis in atrial appendages, pacemaker associated thrombosis, dilated cardiomyopathy, myocardial infarction, ventricular aneurysm, etc. The hemodynamic consequences of intra-cardiac mass such as thrombus, depend on its size and location; the most common hemodynamic disturbance is related to obstruction of the inflow-outflow tract and interference with the functioning of the atrio-ventricular valve. Therefore during autopsy sudden cardiac death as a cause of death should always be kept in mind in seemingly normal individuals.

We report a case of sudden cardiac death because of right atrio-ventricular thrombus in a young adult.

Key Words: Thrombus; Myxoma; Sudden cardiac death; Autopsy

Background:

Sudden cardiac death (SCD) is defined as ñ*Death due to cardiac causes, in which the time and mode of death are unexpected, in an individual with or without pre-existing cardiac disease, which occurs within 1 hour of the onset of the symptoms*ò[1] The frequency of SCD ranges from 36 to 128 per 100,000 populations per year in different areas of the world.[1-5] Intra-cardiac thrombus is an important pathological condition due to its potentially fatal complications. Thrombus in the right side of the heart is a relativley uncommon event[6] and most are coincidentally discovered during the autopsy.

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However, they are diagnosed more frequently at present times due to improved imaging modalities.[7] Such thrombi may develop due to underlying cardiac condition or systemic vascular disorders. Intra-cardiac causes of thrombus development include atrial fibrillation, valvular diseases, blood stasis in atrial appendages, pacemaker associated thrombosis, dilated cardiomyopathy, myocardial infarction, ventricular aneurysm, etc.[6-8] The presence of cardiac thrombi also is associated with autoimmune diseases such as Behçet disease, amyloidosis and Chagas disease.[6,7] Intra-cardiac thrombi may also develop as a consequence of deep vein thrombosis especially in the right side of the heart.[7] Intracardiac thrombi may lead to a fatal outcome due to pulmonary or systemic emboli formation. We report a case of sudden cardiac death because of right atrio-ventricular thrombus in a young adult with no traceable extra-cardiac origin.

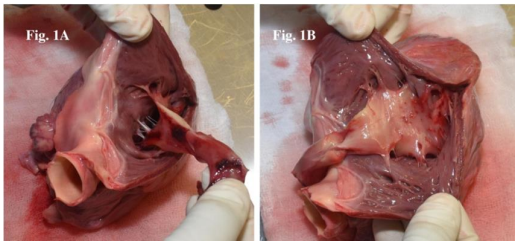
Case report:

As per the testimony of eyewitnesses, a 30-year old male suddenly collapsed on the road on way to his home. He was taken to a nearby hospital where attempts were made for

resuscitation but the subject could not be saved and was declared dead.

External examination revealed a body of a 30-year old male of average built and nutrition. The body weighed 59 kg and measured 166 cm in length. Rigor mortis was appreciable in all the major joints. Post mortem staining was present over the back and dependent parts of the body and was fixed in nature. There were no external injuries over the body. On dissection, all the internal organs were congested. The stomach contained about 100 ml yellowish coloured fluid with congested gastric mucosa. Both lungs were adherent to the chest wall at various sites. On cut section, lungs were congested, oedematous and showed blood exudates admixed with froth and pus. Basal lobes of lungs showed areas of consolidation at places. The pericardial sac and epicardium didn't show any gross abnormality. Heart weighed 302g and was dissected in the conventional inflow-outflow way. On dissection of the right atrial appendage, a pedunculated mass measuring 11.0 cm X 4.4 cm X 0.4 cm was observed in the cavity of the right side of the heart. The mass was pink in colour with a creamish hue. The mass had attachments to chorda tendinae of the right ventricle and supero-lateral part of right atrium with its freely mobile stalk inside the pulmonary trunk. The mass demonstrated haemorrhagic areas at places. **(Fig. 1A & 1B)**

Fig 1A, 1B- Showing Intra-mural Thrombus in Right Side Cavities of Heart



Atrial wall thickness was 0.3 cm, right ventricular wall thickness was 0.5 cm and left ventricular wall thickness was 1.5 cm. Valves, intra atrial and intraventricular septae, were unremarkable. Aorta didn't show any evidence of atherosclerosis. The mass was subjected to histopathology for its atypical features. The sections from the mass confirmed it as a well organised thrombus in the right side of the heart. **(Fig 2A)** Left circumflex and left anterior descending artery showed early atherosclerotic changes. Sections of the lungs showed findings of bronchopneumonia with chronic passive venous congestion with non necrotizing epithelioid cells and heart failure cells. **(Fig 2B)** On the perusal of gross and microscopic examination cause of death was opined as cardiac insufficiency due to intramural thrombi in the setting of bronchopneumonia and chronic passive venous congestion

ig 2A- Organised Mural Thrombus in Heart (H&E, 10X)

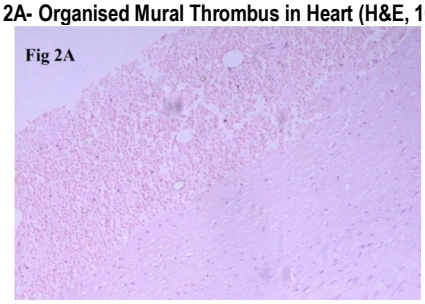
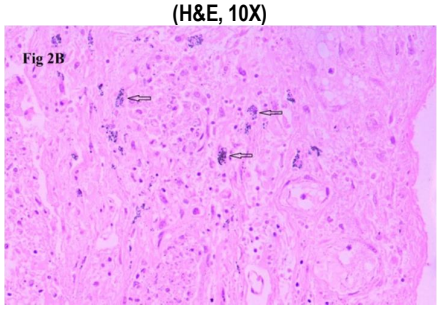


Fig 2B- Congestion and Heart Failure Cells (arrow) in Lung (H&E, 10X)



Discussion:

In routine autopsies, it is unusual to encounter thrombus in the right cardiac chamber with no extra-cardiac origins/ extensions. Right heart thrombi can be grouped under three patterns: Type A thrombi are serpiginous in morphology, highly mobile and associated with deep vein thrombosis and pulmonary embolism. Type B thrombi are formed in situ, non mobile and related to underlying cardiac pathology. Type C thrombi are rare, highly mobile and similar in appearance to myxoma.[9,10]

Myxomas are the most common type of primary cardiac tumour in all age groups and are often discovered coincidentally at autopsies. They have a female predilection and are more common in the third to the sixth decade.[11] Myxomas are usually seen as gelatinous appendages, which are pedunculated on a fibro-vascular stalk. Most of the myxomas are solitary and would

demonstrate myxoma cells embedded in glycosaminoglycans stromal matrix. They often arise from the interatrial septum near the fossa ovalis and are firm in consistency, sometimes with few haemorrhagic areas. It is often difficult to differentiate cardiac myxoma from thrombus on gross examination, especially when a thrombus presents with atypical coloration and resembles in consistency to a myxoma. In few cases, intracardiac thrombi may have stalked which may further complicate the spot diagnosis. Thrombi are much more common than myxoma, located more commonly in atria and in the left side of the heart.[12] Sometimes a mass in the right atrium could be the extension of an abdominal tumour by invading inferior vencava, such as hepatic or renal cell carcinoma. Intracardiac thrombosis in the right heart is frequently iatrogenic in origin. Predisposing factors include indwelling vascular catheters, pacemaker, prosthetic valves, etc.[13]

Right ventricular thrombus secondary to blunt chest trauma causing obliteration of flow in right ventricle and subsequent right heart failure has been reported in the literature.[11] Mural thrombi adherent to the endomyocardium have been reported in patients with endomyocardial fibrosis and Loffler's endocarditis. The aetiology is unknown but in most cases, this occurs secondary to viral infection or inflammation.[11] Other conditions that have an association with right sided thrombosis are right ventricular infarction, cardiomyopathy with subsequent systolic dysfunction, Behçet's disease, atrial fibrillation, hypercoagulable states, etc.

Histological findings in the reported case were consistent with a well organized thrombus in the right side of the heart in the background of bronchopneumonia and chronic passive venous congestion in lungs. No evidence of malignancy was found. No histological features of valvulitis or valvular degeneration were found. The hemodynamic consequences of intra-cardiac mass such as thrombus depend on its size and location; the most common hemodynamic disturbance is related to obstruction of the inflow-outflow tract and interference with the functioning of the atrio-ventricular valve which proved fatal as in the reported case.

Conclusion:

In the present case, there was no past history of any cardiac illness or any genetic disorder in the deceased and his family members. There was no history of trauma to the thoracic region. Evidence of thrombus in the heart is a significant finding, particularly in cases of road traffic accident, fall from height etc., wherein this finding could be a potential cause of the mishap. It is not very common in general population to present with sudden cardiac death in a young adult. Therefore, during autopsy, sudden cardiac death as a cause of death should always be kept in mind in seemingly normal individuals, as was observed in the present case.

Conflict of Interest: None.

Financial Assistance: None.

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Corrigendum

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Meticulous Autopsy Revealed Ruptured Fallopian Tube: A Case Report

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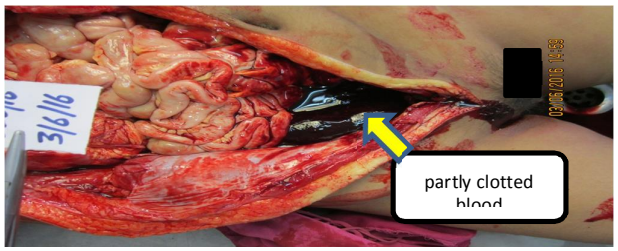
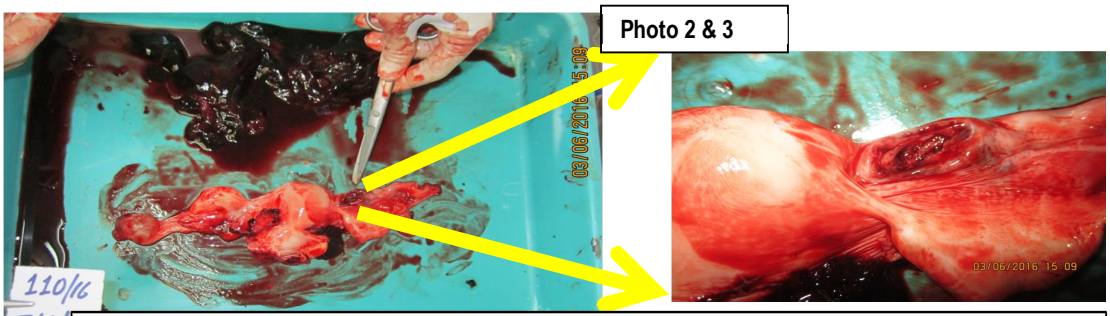
Photographs:

Photo 1

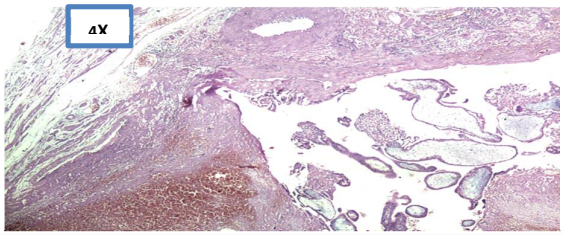


Product of conception not found due to severe & extensive retroperitoneal hemorrhage. Hence, viscera & uterus with adnexa preserved for histo-pathological examination.

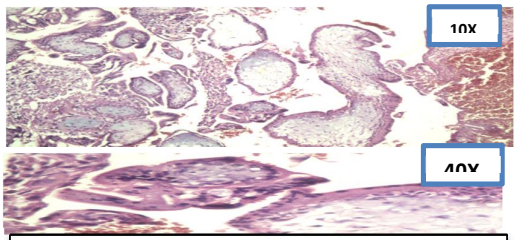
Photo 2 & 3



Pic showing uterus, FT & ovaries A rent of size 2cm x 1.5cm on posterior surface of isthmus region of right fallopian tube



Lumen (L) of FT showing chorionic villi (V) along with surrounding hemorrhages



Villi showing central mesenchyme (MC) surrounded by cytotrophoblast (C) and syncytiotrophoblast (S) cells