

An unexpected cause of sepsis in a patient with dental decay

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Keywords

Cardiac tumors, myxoma, pulmonary emboli, sepsis

Key Learning Points

- Consider infected cardiac neoplasm in the differential diagnosis of unexplained sepsis in patients with poor oral hygiene.
- Chest X-rays should be scrutinized carefully for subtle calcified lesions which may represent calcified pulmonary emboli and cardiac masses.
- Early echocardiography is essential in the investigation of patients with suspected cardiac tumours.
- Embolisation is a frequent complication of cardiac neoplasm and therefore CT scans have to be evaluated in detail for the presence of this entity.

Answers

1. The posteroanterior chest X-ray reveals cardiomegaly and multiple radiopaque nodi in the pulmonary fields. The lateral image confirms the nodi and reveals a calcified mass within the heart contour.
2. A transthoracic echocardiogram, and thoracic CT scan
3. An infected cardiac neoplasm.

4. Intravenous broad spectrum antibiotics, adjusted according to sensitivities followed by cardiac surgery to remove the tumour.

Case Outcome

The patient underwent transthoracic echocardiography which confirmed the presence of a calcified intracardiac mass in the right atrium, with significant tricuspid insufficiency and compression

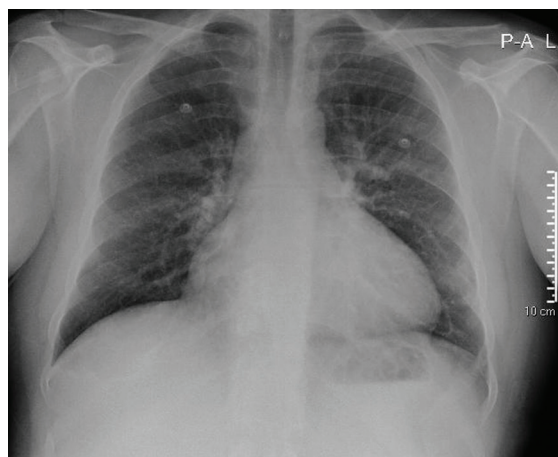


Figure 1A. Postero-anterior chest X-ray.

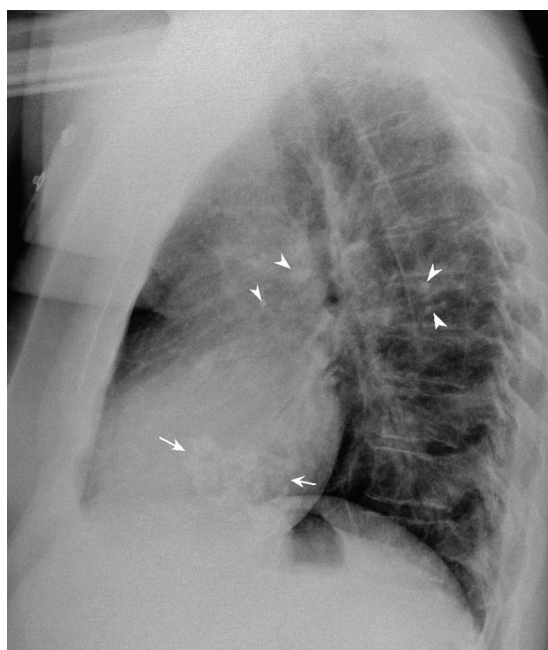


Figure 1B. Lateral chest X-ray reveals pulmonary radiopaque nodi (arrowheads) and a calcified mass within the heart contour (arrows).

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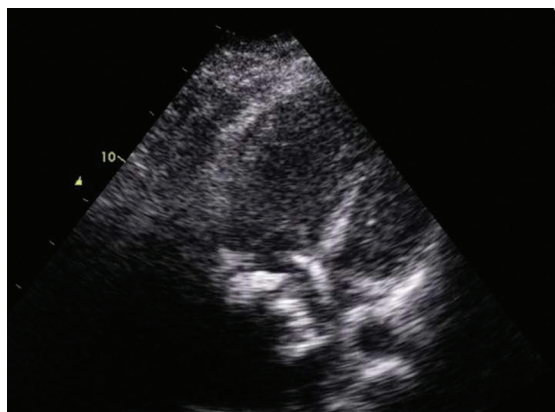


Figure 2. Transthoracic echocardiography.

of the left atrium (Figure 2). CT angiography of the thorax revealed the tumour was 7.2x5.3x4.4 cm. Initially, no pulmonary vascular abnormalities were seen. However, on review in bone setting, extensive calcified emboli were found bilaterally in the pulmonary artery (Figures 3A and 3B). Low molecular weight heparin was commenced and antibiotics were adjusted when blood cultures grew for *Group C Streptococcus*. After six weeks of antibiotic treatment and extraction of all teeth, the mass was resected (Figure 4) and histologically classified as calcified myxoma.

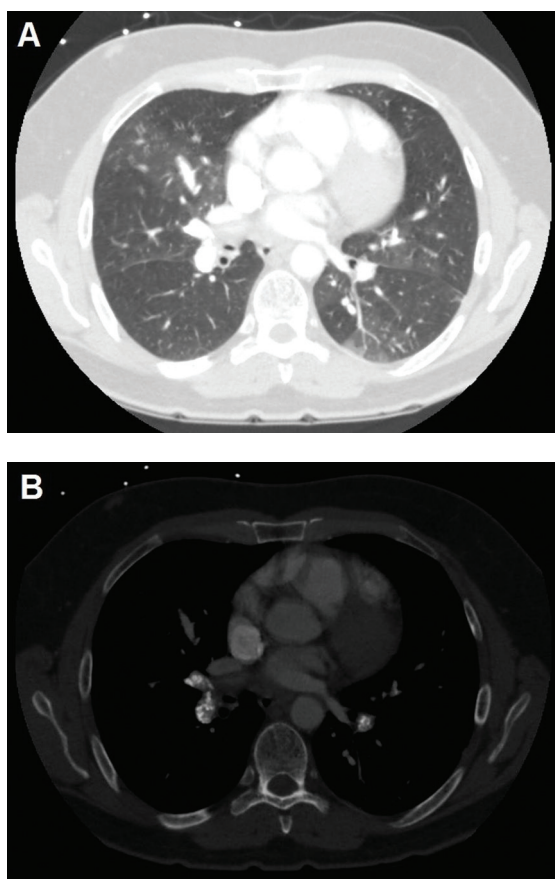


Figure 3. (A) CT angiography does not indicate vascular occlusion in lung setting. (B) CT angiography reveals extensive calcified pulmonary emboli in bone setting

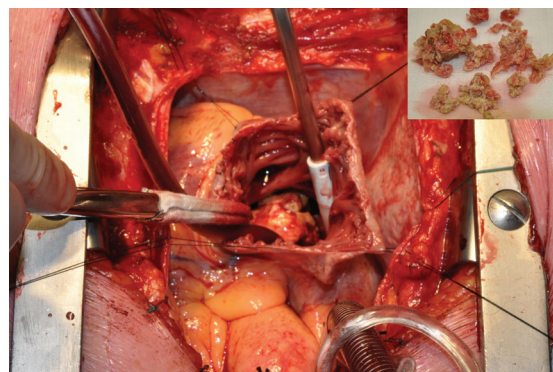


Figure 4. The calcified right atrial mass is resected in multiple fragments.

Discussion

This case describes a rare example of an infected right atrial calcified myxoma, with extensive calcified pulmonary emboli. The primary source of infection was most probably dental decay.

Cardiac neoplasms were first described in the 16th century by anatomist Realdus Columbus. It took until 1942 however, before the first in vivo resection of a tumor was published.¹ The average prevalence of cardiac tumors in autopsy studies is 0.02%, of which the majority is benign (75%).² Myxomas are the most common and comprise 45% of all cases.³ They are predominantly situated in the left atrium (75%).⁴ Other benign tumors include fibroelastomas and lipomas. Malignant neoplasms, most frequently angiosarcomas, are relatively often situated in the right atrium. Calcification of myxomas has been reported in around 10 percent of cases but to our knowledge is exceptional in the extensive form we observed.⁴

Cardiac neoplasms usually present with constitutional symptoms such as fever, fatigue and weight loss. Diagnosis is therefore often coincidental. Depending on the localisation of the tumor, patients develop complaints of dyspnea, orthopnea, pulmonary edema, peripheral edema, hepatomegaly, ascites or syncope. Mechanical obstruction may induce heart failure or valve regurgitation. Furthermore, invasive growth of the mass can impair the contractility of the myocardium and cause arrhythmias or pericardial effusion. Heart murmurs are found in approximately 64%.

Embolisation occurs in 30–40% and is at greatest risk for myxomas situated at the aortic valve or in the left atrium.⁴ The retinal and cerebral arteries are frequently affected, leading to hemianopia, hemiplegia and aphasia. Embolisation to the pulmonary arteries is less common and may remain undetected for a substantial period of time due to its nonspecific clinical manifestation. Calcified pulmonary emboli have been reported very rarely.

Infection of myxomas is unusual; this can result from intravenous drug abuse, cutaneous infections, surgical or dental procedures and untreated caries, as

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in this case. Microorganisms most frequently known to colonise cardiac neoplasms are *Staphylococcus aureus* and *Streptococcus viridans*.⁵ Patients usually present with symptoms suggestive of sepsis without a clear underlying focus of infection.

Although chest radiography may reveal the mass if calcified, as in this case, transthoracic echocardiography is the initial imaging modality of choice. In addition to diagnosis and localisation of the tumor, echocardiography may also give an indication of the severity of obstruction. Further detail can be obtained by transoesophageal echocardiography and

cardiac CT or MRI, which may enable differentiation in the type of tumor. Coronary angiography is indicated prior to surgical resection, for it reveals potential vascularisation of the neoplasm. Cardiac biopsy is not usually performed due to complications such as embolisation.

Due to the possible cardiovascular complications mentioned above, prompt surgical resection is the treatment of choice. Postoperative complications include arrhythmias and conduction abnormalities. Prognosis after resection of myxomas is generally good and recurrence is described in up to 5% of cases.⁶

References

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Erratum

In the article *The Febrile patient with Neutropaenia* by Cooksley and Holland (*Acute Medicine* 2012;11(4):p246-250), the statement on p248, col 1 para 3 relating to the MASCC score should read: 'High risk patients with a score <21 require inpatient care, whereas those with a score of 21 or more may be appropriate for outpatient care' (i.e. note that a high score denotes lower risk for these patients)