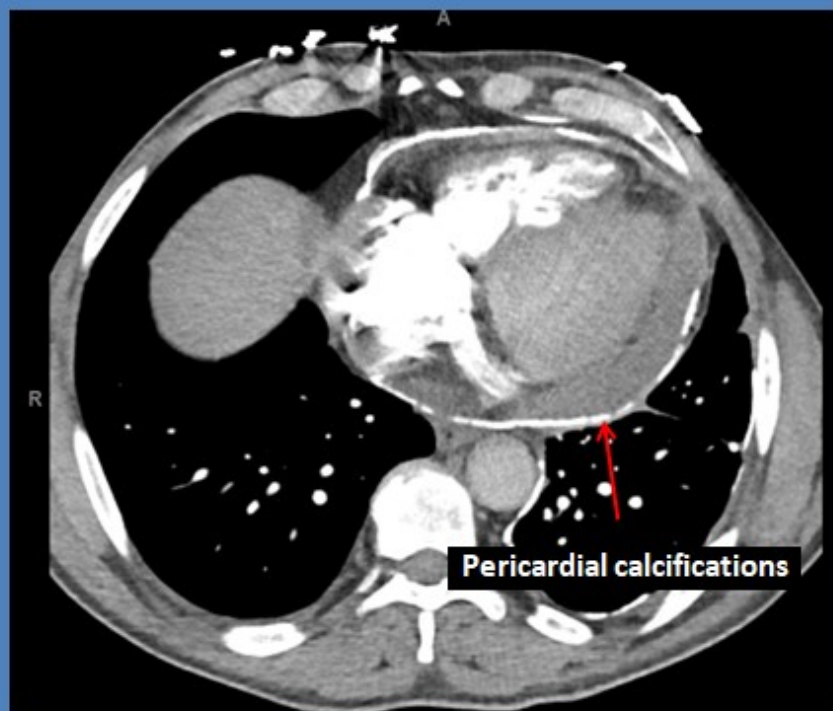
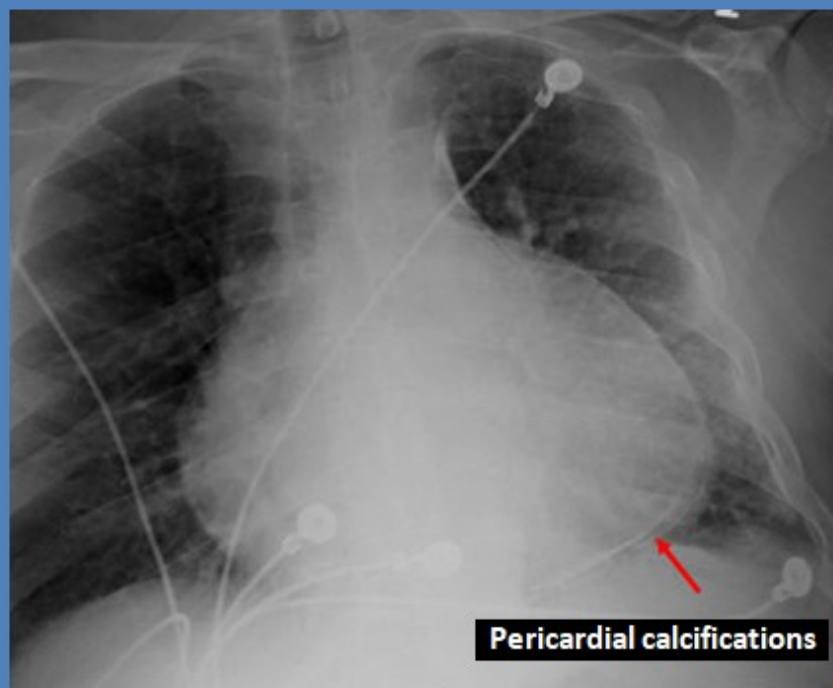


Pericardial Calcification: *Armored Heart Sign Of Constrictive Pericarditis!*

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Description

The above posteroanterior chest X ray and coronal computed tomography images reveal, in addition to cardiac enlargement, extensive circumferential pericardial calcifications encasing the entire epicardial surface. Further echocardiographic and invasive hemodynamic studies revealed a combination of restrictive and constrictive cardiomyopathy as a cause of dyspnea, prompting intensive medical treatment given multiple comorbidities and high risk of surgery.

Discussion

In the setting of congestive heart failure, circumferential pericardial calcification outlining the heart border on chest x-ray (known as Panzerherz, or the “Armoured Heart Sign”) is strongly suggestive of calcific constrictive pericarditis [1]. Based on the patient’s presentation and concomitant clinical data, restrictive cardiomyopathy and myocardial calcification and/or scarring (possibly from prior myocardial infarction) can have a similar presentation and will need to be ruled out [2].

Pericardial calcifications can be due to any condition causing chronic pericardial inflammation, and can be an incidental finding without symptoms [3]. Many of the constrictive pericarditis cases are also associated with pericardial calcifications, which tends to have certain circumferential characteristics leading to altered hemodynamics and symptoms [4, 5]. The extent of the calcification is also variable and may contribute to the presence and extent of physiologic changes and symptoms [6].

Some inflammatory conditions leading to pericardial calcifications include infections (tuberculosis, coxsackie B virus, histoplasmosis), penetrating trauma/cardiac injury, cardiac surgery (valve surgery, coronary artery bypass grafting), intrathoracic malignancy (lung and breast cancers, Hodgkin lymphoma, mesothelioma, thymoma, metastases), radiation exposure, uremia, and dialysis [7]. Other potential causes of pericardial calcifications include connective tissue disorders (sarcoidosis, rheumatoid arthritis, SLE, systemic sclerosis/CREST syndrome), hypothyroidism/

myxedema, hypercholesterolemia, and various drugs/toxins. However, pericardial calcifications can also be idiopathic.

In developed countries, idiopathic constrictive pericarditis is most common, followed by postoperative and post-radiation etiologies [8]. In developing countries, on the other hand, infectious etiologies (especially tuberculosis) remain common. The presence of pericardial calcifications has been linked to increase perioperative mortality during pericardiectomy, which is the curative treatment for symptomatic constrictive pericarditis. Poorer outcomes have also been associated with pericarditis secondary to radiation exposure [9]. This increased perioperative mortality may be related to subepicardial or myocardial involvement of the fibrocalcific process, which can worsen the prognosis and reduce the chances of a successful pericardiectomy [10, 11].

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