

## A case of extensive cardiac calcification

Sir,

Myocardial calcification occurs in either previously injured/necrotic myocardium with normocalcemia or healthy myocardium with hypercalcemia.<sup>[1]</sup> Though localized myocardial calcifications are common after myocardial infarction; extensive myocardial calcification is rarely reported.<sup>[1]</sup> Extensive myocardial calcification in the setting of severe acute pancreatitis (SAP) has not been described yet. We are sharing one such interesting case from our intensive care unit (ICU).

A 39-year-old businessman presented to ICU with history of acute onset severe abdominal pain and vomiting, following a binge drinking. He was a chronic alcoholic since 10 yrs and had a history of irregularly treated hypertension for two years with normal baseline creatinine values. He had no h/o chest pain suggesting myocardial infarction or chest trauma. On examination, he was conscious, restless, having distended and tender abdomen and was in shock. He had high total leukocyte count (28,000/cmm), serum creatinine (4 mg/dl) and lipase of 1500 IU/L. Screening electrocardiography (ECG) and transthoracic echocardiography (TTE) were normal.

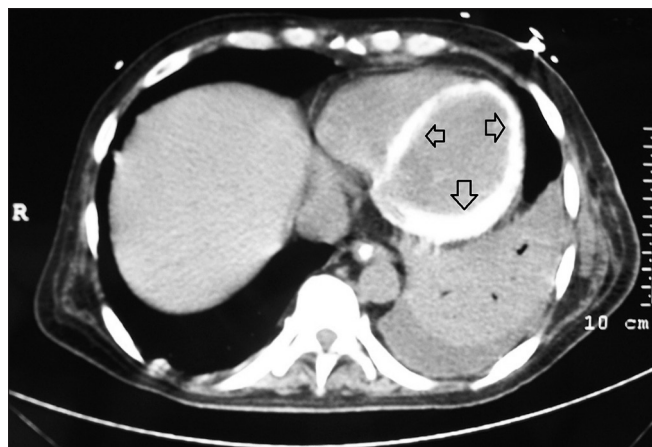
Computed tomography (CT) of abdomen confirmed our working diagnosis of SAP (pancreatic parenchymal necrosis >50%).

During his stay in ICU, he had issues like septic shock (multiple episodes), acute kidney injury, and raised intra-abdominal pressure. He was treated with broad-spectrum antibiotics, anti-fungals, vasopressor and inotropes, mechanical ventilation with tracheostomy, enteral nutrition, renal replacement therapy, and multiple percutaneous drainages followed by timely necrosectomy to drain necrotic abdominal content. TTE was repeated to re-check his cardiological status as we were facing difficulty in weaning on 12<sup>th</sup> week of ICU stay. It showed calcification of mitral leaflet and myocardium with grade I diastolic dysfunction of left ventricle. A ring calcification around left ventricle was prominent in subsequent CT scan [Figure 1]. ECG showed non-specific ST-T changes. Cardiac enzyme markers were normal. Serum calcium (maximum 10.2 mg/dl) and phosphorus levels (maximum 5 mg/dl) since admission were within normal limit (checked repeatedly). Retrospective analysis of previous scans revealed that cardiac calcification was just started on

6<sup>th</sup> week [Figure 2]. The patient, however, succumbed to his illness due to multi-drug-resistant complicated intra-abdominal infection and septic shock within a few weeks. Post-mortem cardiac biopsy could not be done due to non-availability of consent.

## COMMENTS

Cardiovascular complications of SAP occur temporally in the early period of the disease with dismal clinical outcome due to proteolytic enzymes or systemic inflammatory response.<sup>[2,3]</sup> ECG changes like non-specific ST-T changes, ST segment elevation, and sinus tachycardia are linked with SAP-related electrolyte (calcium, phosphate, and magnesium) abnormalities.<sup>[2]</sup> To the best of our knowledge and literature search, we could not find any report of SAP with myocardial calcification or structural cardiac abnormalities.



**Figure 1:** Computed tomography view of left ventricular ring calcification (arrowed)



**Figure 2:** Computed tomography view showing initiation of left ventricular wall calcification (arrowed)

Mechanism of the myocardial calcification is believed to be either dystrophic or metastatic in nature.<sup>[1,4]</sup> Dystrophic calcification occurs in injured or necrotic myocardium with a normal serum calcium level. On the other hand, metastatic calcification can occur in previously healthy myocardium with malignant (parathyroid carcinoma, multiple myeloma, lymphoma, leukemia) or benign conditions (like chronic renal failure, hyperparathyroidism, and vitamin D excess) with calcium homeostasis abnormality.<sup>[1,5]</sup> In literature search, extensive cardiac calcification is reported with variety of conditions related to sepsis, septic shock, vasopressor uses, even resuscitation.<sup>[4-7]</sup> Papillary muscle, valves, aneurysm, and sites of healed myocardial infarct are the common sites for myocardial calcification. Interestingly, at present, no definitive therapies are available for myocardial calcification, other than cardiac transplant.<sup>[2]</sup>

This case report is an eye-opener, that myocardial calcification can occur as a complication of SAP. At present, we cannot comment on the exact mechanism of the myocardial calcification in this patient. Most likely, disordered calcium-phosphate homeostasis resulting in deposition of calcium in normal myocardial tissue may be responsible for that metastatic calcification. Calcium homeostasis abnormality in early pancreatitis may be the culprit. But, absence of cardiac calcification in older CT scan (before 6<sup>th</sup> week) and normal calcium with phosphorus values go against it. Vasospastic mechanisms due to vasopressor use leading to myocardial injury and sepsis-related dystrophic calcification, however, cannot be excluded.

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