

## CLINICAL VIGNETTE

# A Case of Recurrent Pericarditis in Multiple Family Members

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### Case Presentation

The patient is a 54-year-old man with no past medical history who presented to his local emergency room with 11 days of cough, fever, and shortness of breath. He had been evaluated as an outpatient for these symptoms and was treated empirically for pneumonia. When his symptoms did not improve and he began to feel palpitations, he sought emergent care.

Upon arrival to the ER, his blood pressure was 133/85 with a heart rate of 110 bpm and a temperature of 101.4°F. His labs were significant for a WBC count of  $21.7 \times 10^3/\mu\text{L}$  with a left shift and a BUN and creatinine of 21 mg/dL and 1.5 mg/dL, respectively. His troponin was negative and a C-reactive protein was elevated at 13 mg/dL. A chest X-ray showed an enlarged cardiac silhouette, and an emergent bedside echocardiogram showed a moderate-sized pericardial effusion with partial right ventricular collapse during diastole. He disclosed immediately that his mother had recurrent pericardial effusions and pericarditis with no etiology identified, as well as that she had undergone pericardial stripping. He also had a maternal aunt who had suffered recurrent pericardial effusions and pericarditis, which was attributed to her diagnosis of Sjögren's disease.

While in the ER, the patient became hypotensive with a systolic BP in the 80s, and he underwent an emergent pericardiocentesis with drain placement. 450cc of serous fluid was evacuated. Analysis of the fluid was significant for a mildly elevated LDH; there was no evidence of infection or pathology. His workup for secondary causes of pericardial effusion was without yield and with no infectious, neoplastic, metabolic, or thyroid abnormalities identified. A comprehensive rheumatologic workup was also negative. The patient was treated medically with colchicine and discharged after a week of hospitalization.

A few weeks later the patient was re-admitted through the emergency room with fevers, progressing shortness of breath, and pleuritic pain. He had no re-accumulation of pericardial fluid; however, he did have bilateral pleural effusions. Bilateral thoracenteses were performed, and no etiology of the effusions was identified after analysis of the transudative fluid. As his kidney function had improved, an NSAID was initiated and the patient was discharged on this medication as well as colchicine.

Two months have elapsed since the patient's initial presentation; he has been monitored in the outpatient setting. He has been feeling better, has returned to his normal routine, and has undergone a surveillance echocardiogram that showed no re-accumulation of pericardial fluid. While we have diagnosed this as idiopathic recurrent pericarditis, the question remains as to whether there is a genetic component to his condition, given his maternal family history.

### Discussion

Pericarditis is present in 0.1-0.2% of hospitalized patients, and in developed countries, the most common cause is idiopathic.<sup>1-5</sup> Recurrent pericarditis is defined as symptoms of acute pericarditis after the initial episode has resolved and usually occurs weeks to months later. Recurrent pericarditis occurs in 15-30% of cases of patients with idiopathic pericarditis.<sup>1,6</sup>

Familial predisposition to recurrent, idiopathic pericarditis has been described<sup>3-5,7</sup> in case reports of patients within the same family presenting with either pericarditis or pericardial effusion. Our case study describes three family members with recurrent pericarditis, suggesting a possible mitochondrial, X-linked, or autosomal dominant condition with incomplete penetrance.

Given the geographic proximity to one another, there could be concern for an infectious etiology for this patient series with pericardial disease. However, our patient had negative viral titers and had no identifiable bacterial, parasitic, or fungal cause. Also, the time difference of 20 years between presentations of different family members makes a common infection unlikely.

There is a concern for an autoimmune etiology as these conditions often have familial clustering. Additionally, anti-nuclear antibodies (ANA) have been reported in 43.3% of patients with recurrent idiopathic pericarditis as compared with 9.8% of controls.<sup>8</sup> The patient's maternal aunt did have Sjögren's disease; however, the patient had a comprehensive rheumatologic evaluation that yielded no autoimmune condition. There was no known autoimmune condition in the patient's mother.

There is increasing interest in an autoinflammatory disease process in patients with recurrent idiopathic pericarditis. Autoinflammatory diseases are a group of genetic disorders

caused by gene mutations leading to primary dysfunction of the innate immune system. This subsequently results in dysregulation of the immune response without generation of autoantibodies.<sup>9</sup> Some patients have high levels of IL-6, IL-8, and INF-gamma present in the pericardial fluid but absent in the plasma, suggesting a localized inflammatory reaction.<sup>10</sup>

Plasma C-reactive protein (CRP) measurement is a useful marker to detect acute inflammatory processes. This acute-phase reactant is produced by the liver and has a plasma half-life estimated to be 19 hours, constant under all conditions. CRP is elevated in patients with active pericarditis and decreases once the acute inflammatory process has resolved.<sup>9</sup>

Recurrent pericarditis with or without pericardial effusion is a frustrating condition for many patients. As a familial predisposition towards recurrent pericarditis has been found, this diagnosis should be higher on the differential in family members presenting with chest pain. Recurrent pericarditis in a family series may represent an inherited autoinflammatory condition. CRP represents a valuable tool that clinicians can use to assess the severity of the inflammatory process and to guide the patient's response to treatment and duration of therapy.<sup>9,11</sup>

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