



Review Article

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Pericarditis, an overview on diagnosis, complications, and management approach: A Literature Review

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ABSTRACT

Background: Pericarditis is inflammation of the pericardium and it is the most common pericardial disease worldwide. Although its normal function is not with such importance to the cardiac function, pericardial diseases can be dramatic for the patients and they can lead to life-threatening complications. **Objective:** Our aim is to review the published literature that discussed pericarditis and summarize its complications and management. **Method:** PubMed database was used for articles selection, and the following keywords were used in the Mesh ((“pericarditis”[Mesh]) AND (“management”[Mesh]) OR (“evaluation”[Mesh])). **Conclusion:** In viral or idiopathic cases of pericarditis, the mainstay of medicinal treatment is NSAIDS as first-line therapy and within 2 days after the start of treatment, patients are expected to start feeling better. Colchicine is recommended as a combined drug with NSAIDS in order to optimize the treatment and reduce the recurrence rate. The recent literature is against corticosteroid therapy because it can lead to the delayed resolution of the condition, high recurrence rate, and more side effects.

Key words: Pericarditis, cardiac function, evaluation.

INTRODUCTION

Pericarditis is inflammation of the pericardium and it is the most common pericardial disease worldwide [1]. It usually occurs in young individuals and it has a high recurrence rate [2, 3]. It accounts for around 5% of patients who present to the hospital with non-ischemic chest pain and it is responsible for 0.2% of all cardiovascular admissions [4, 5]. The prognosis of this disease varies depending on the age and the underlying cause. The mortality rate may reach about 1.1% in the developed countries [6-8].

Pericarditis can appear as an isolated condition of its own or it can be caused by other systemic disorders. The etiology of acute pericarditis is hard to determine and is mostly thought to be idiopathic due to the low trust in the

diagnostic methods that are usually used to confirm the underlying cause [9]. In this article, we aimed to discuss the etiology and complications of pericarditis and summarize the evaluation and management of such condition.

METHODS:

PubMed database was used for articles selection, and the following keys were used in the mesh ((“pericarditis”[Mesh]) AND (“management”[Mesh]) OR (“evaluation”[Mesh])).

In regards to the inclusion criteria, the articles were selected based on the inclusion of one of the following topics: pericarditis, etiology, complications, evaluation, and management.

Exclusion criteria were all other articles, which did not have one of these topics as their primary endpoint.

DISCUSSION:

The pericardium is a thin layer that covers the heart and separates it from other structures in the mediastinum. It also acts as physical support to the heart in case the heart experiences a hemodynamic impact [10]. Although its normal function is not with such importance to the cardiac function, pericardial diseases can be dramatic for the patients and they can lead to life-threatening complications. Pericarditis is the most common pericardial disease and it can lead to pericardial effusion, cardiac tamponade, and pericardial constriction as dangerous complications [11].

Pericarditis is mostly caused by a viral infection, for example, influenza, Epstein-bar virus, Coxsackie virus, enterovirus, hepatitis C virus, herpes simplex virus, and HIV. In immunocompromised patients, the most common virus is Cytomegalovirus [11]. Viral multiplication of the present virus in the pericardium is behind the pathology of pericarditis. This multiplication will stimulate an inflammatory response leading to inflammation [12, 13]. Acute pericarditis can be associated with several conditions that can predispose the condition, such as, previous myocardial infarction, aortic dissection, and chest wall trauma. History of thoracic or cardiothoracic surgeries is also considered risk factors for pericarditis. Autoreactive or immune-mediated diseases and uremia can also contribute to pericarditis development [10, 14, 15]. Rare predisposing disorders include cancer, hypothyroidism, and kidney failure. Moreover, radiation, chemotherapy, immunosuppressive medications, and other causative medications like hydralazine can lead to pericarditis [14].

Clinical features and diagnosis:

The typical symptom of pericarditis is centralized chest pain that increases with inspiration and lying down and decreases with sitting up and leaning forward [16]. Pericarditis patients may also complain of palpitations, tachycardia, syncope, pleuritic symptoms, dysphagia, fever, and weight loss, but these symptoms should be evaluated carefully to exclude other conditions. A pericardial friction rub is possible to be found on auscultation in pericarditis patients [10].

In electrocardiography (ECG), widespread saddle-shaped ST elevation is seen in cases of pericarditis. It is also accompanied by PR-depression. Unless there is a large pericardial effusion, chest X-ray will appear normal. Laboratory testing is also important because CRP and ESR are expected to be high. In cases of associated myopericarditis, troponin may also be elevated. In general, cardiac markers will raise when there is more involvement of the myocardium [16].

When there are doubts regarding confirming the diagnosis of pericarditis, the use of cardiovascular magnetic resonance is advised because it can show the inflammation of the pericardium and rule out any myocardial injury and other differential diagnoses [17].

Pericarditis is classified depending on the duration of the attack as shown in Table 1.

Table 1: pericarditis classification based on the duration:

Acute	<4 weeks
Incessant	>4-6 weeks but <3 months
Chronic	>3 months
Recurrent	Periods of remissions lasting for >4-6 weeks

Complications:

Regarding prognosis, some clinical manifestations can predict poor prognosis and high complications risk. These features are fever, gradual onset, large pericardial effusion, and persistent symptoms for more than 1 week despite the use of anti-inflammatory drugs. The presence of these features requires thorough evaluation and urgent intervention in order to avoid devastating outcomes [18].

The most common complication of pericarditis is recurrence as 24% of patients experience recurrent pericarditis [10, 19]. They experience similar laboratory tests' results and ECG findings as the first time they had acute pericarditis [10, 20]. However, they usually report less intensity and fewer episodes of centralized chest pain in the recurrent attacks [10].

Chronic pericarditis can lead to dangerous complications, such as constrictive pericarditis. The chronic inflammation will eventually thicken the pericardium layer and lead to fibrosis and formation of adhesions. This ultimately will affect the normal heart function as it will decrease cardiac output and it may lead to right-sided heart failure. These consequences occur because the resultant fibrosis and adhesions limit the elasticity of the atrial and ventricular muscles and subsequently inhibit filling and elevate filling pressures [10, 11]. In addition, right-sided cardiac failure can lead to portal hypertension, ascites, and peripheral edema [21]. Constrictive pericarditis is usually treated surgically by removing the whole pericardium (pericardiectomy) [20].

Pericardial effusions are also of the expected complications but they differ by size. Small effusions usually resolve by the standard treatment without showing any symptoms [11]. On the other hand, moderate to large effusions may lead to cardiac tamponade, which can be a life-threatening complication if it was left unrecognized and without intervention. When there are signs of cardiac tamponade in patients of pericarditis like hypotension or affected cardiac function, echocardiography is recommended in order to rule the tamponade out. High suspicion index is advised to have while evaluating such cases because the rapid accumulation of fluid can lead to cardiac tamponade in about 15% of pericarditis patients. Removal of the accumulated fluid by pericardial drainage is the optimal treatment of cardiac tamponade [10, 21].

Management:

In viral or idiopathic cases of pericarditis, the mainstay of medicinal treatment is NSAIDs as first line therapy [1]. A course of ibuprofen or indomethacin for 1 to 2 weeks has shown a significant efficacy in treating pericarditis. In patients with a history of coronary artery disease, aspirin should be used instead of NSAIDs. Within 2 days after the start of treatment, patients are expected to start feeling better and symptoms like chest pain and fever are expected to resolve [22, 23].

Nevertheless, patients may fail to obtain remission with first-line therapy. Therefore, in order to optimize the treatment and reduce the recurrence rate, NSAIDs are recommended to be accompanied by colchicine. However, patients receiving colchicine can experience gastrointestinal intolerance. Colchicine also has a narrow therapeutic index and thus increased carefulness is advised while prescribing it. Combining NSAIDs with colchicine has shown better outcomes than using NSAIDs alone [2, 24, 25].

Regarding corticosteroids, they should be only used when there is a contraindication of NSAIDs and/or colchicine, such as pregnancy or when an autoimmune rheumatic disease is the underlying etiology of pericarditis. Traditionally, corticosteroid therapy was the first-line therapy but later it was found that corticosteroids lead to the delayed resolution of the condition, high recurrence rate, and more side effects. Moreover, they may reduce the efficacy of colchicine if they were combined. Nevertheless, if steroids had to be used or added to the initial therapy, low-dosage prednisone is the recommended choice [26, 27].

In refractory cases to medicinal therapy, surgical pericardiectomy is the last hope to prevent further burdensome and life-threatening complications [16].

CONCLUSION:

In viral or idiopathic cases of pericarditis, the mainstay of medicinal treatment is NSAIDs as first-line therapy and within 2 days after the start of treatment, patients are expected to start feeling better. Colchicine is recommended as a combined drug with NSAIDs to optimize the treatment and reduce the recurrence rate. The recent literature is against corticosteroid therapy because it can lead to the delayed resolution of the condition, high recurrence rate, and more side effects.

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