

Characteristics, Complications, and Treatment of Acute Pericarditis



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KEYWORDS

- Acute pericarditis • Retrosternal chest pain • Pericardial effusion

KEY POINTS

- Acute pericarditis is an inflammation of the pericardial sac occurring predominantly in men and in those aged 20 to 50 years.
- Approximately 65% to 85% of cases of pericarditis result from idiopathic viral or bacterial infections. Noninfectious causes are cardiac surgery, percutaneous coronary intervention, systemic inflammatory conditions, and renal failure.
- Classic history and physical findings are recent viral symptoms, chest pain, and pericardial rub.
- Diagnostic tests include echocardiogram, cardiac MRI or computed tomography scan, and laboratory blood tests such as antinuclear antibodies, erythrocyte sedimentation rate, and high-sensitivity C-reactive protein.
- Treatment includes use of colchicine, acetylsalicylic acid, and nonsteroidal antiinflammatory drugs.

INTRODUCTION

Case Study

Mr Edwards is a 40-year-old man admitted with sharp chest pain that worsens on inspiration and radiates to his left arm. He provides a history of fever, muscle aches, chest congestion, and cough for 2 weeks. His electrocardiogram shows ST segment elevation in all leads. His high-sensitivity C-reactive protein is 4 mg/dL and his white blood count is 12,000.

Acute pericarditis presents challenging features because there are similarities between other conditions and complications that must be recognized and treated, at times, with urgency. This article reviews the normal function of the pericardium, the

Disclosure statement: The author has nothing to disclose.

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Crit Care Nurs Clin N Am 27 (2015) 483–497

<http://dx.doi.org/10.1016/j.cnc.2015.08.001>

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0899-5885/15/\$ – see front matter © 2015 Elsevier Inc. All rights reserved.

definition of acute pericarditis, characteristic symptoms, history and physical findings, diagnostic blood and imaging reports, and recommended treatment. Several Italian reports about research conducted with use of colchicine are reviewed; however, the dosages of medications provided are current dosages available in the United States.

STRUCTURE AND FUNCTION OF THE PERICARDIUM

The pericardium, a membranous sac surrounding the heart, consists of an outer fibrous layer and an inner serous layer separated by the pericardial cavity that contains approximately 45 mL of fluid.^{1,2} Although normal cardiac function can be maintained in its absence, the pericardium serves several important functions.² The pericardium anchors the heart in the thorax, provides an immunologic barrier, and mediates effects of trauma to the heart.³ Pericardial fluid provides lubrication for ease of movement as the heart contracts and twists within the mediastinum.^{3,4} A plethora of nervous innervation exists in the pericardium, resulting in severe pain with inflammation.^{3,4} Additionally, prostaglandins secreted by the pericardium serve to modulate cardiac reflexes and tone.²⁻⁴

DEFINITION OF ACUTE PERICARDITIS

Acute pericarditis is a common condition resulting from inflammation of the pericardium that occurs acutely or secondary to a systemic condition.⁵ Acute pericarditis is generally self-limited in that symptoms resolve in response to treatment within days to weeks.^{6,7} Pericarditis can result in an effusive or a constrictive condition:

- Effusive pericarditis is characterized by an increase in the amount of serous fluid accumulating in the pericardial space.⁸ Cardiac tamponade, a dreaded and potentially life-threatening complication of pericarditis, may occur as accumulation of fluid compresses the cardiac chambers and prevents filling.⁹
- Constrictive pericarditis occurs when fibrosis and rigidity develops, usually a result of chronic pericardial inflammation that impedes left ventricular filling and reduces cardiac output.^{8,9} Right-sided heart failure can be also be found with constrictive pericarditis.^{1,9}

INCIDENCE

Although the incidence of acute pericarditis is unknown, up to 5% of visits to emergency departments for nonacute myocardial infarction chest pain may be related to pericarditis.¹⁰ Recent reports state that approximately 90% of pericarditis in developed countries is postviral. Imazio and colleagues¹¹ reported the incidence of acute pericarditis as 27.7 cases per 100,000 of the population per year in an urban area of Italy. In developing countries such as sub-Saharan Africa there is a high prevalence of tuberculosis (TB); the incidence of pericarditis is 70% to 80%; and, in those with human immunodeficiency virus (HIV), it is equal to or greater than 90%.

CAUSES

Almost 90% of cases of pericarditis have a viral cause.^{3,12} A wide variety of viruses have been implicated in the development of pericarditis with the most common being influenza, Coxsackie, Epstein-Barr, and human herpes virus-6.⁴ Several investigators report an idiopathic cause because diagnostic testing can provide a low yield of confirmatory results.^{2,4,8,9,11} More specific details of causative viruses include:

- Enterovirus, echovirus, adenovirus, cytomegalovirus, Epstein Barr virus, herpes simplex virus, influenza, parvovirus B19, hepatitis C, and HIV.¹²

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