Case Report

Delayed recurrent pericarditis complicated by pericardial effusion and cardiac tamponade in a blunt trauma patient

Hazar H. Khidir1, Jordan P. Bloom1,2, Alexander T. Hawkins1,2

1Harvard Medical School, 2Department of Trauma, Emergency Surgery and Surgical Critical Care, Massachusetts General Hospital, Massachusetts

ABSTRACT

A 19-year-old male suffered orthopedic fractures, blunt solid organ injury and pneumopericardium after a fall from 40 feet. With the exception of an external fixation device, he was managed non-operatively and discharged to a rehabilitation unit after 8 days. He was readmitted 4 days later with chest pain and clinical evidence of pericarditis that resolved with the initiation of non-steroidal anti-inflammatory drugs and colchicine. He returned to the rehabilitation hospital, but was readmitted once again for chest pain and hypotension. Echocardiogram revealed cardiac tamponade that required emergent drainage. He tolerated the procedure well and was discharged home from the hospital to continue treatment for his pericarditis. He is doing well at 3 months of follow-up.

Key Words: Cardiac tamponade, pericardial effusion, pericarditis, pneumopericardium, trauma

INTRODUCTION

Acute pericarditis is the most common pathologic condition of the pericardium and is diagnosed in approximately 5% of patients who are admitted to the Emergency Department with non-ischemic cardiac chest pain.[1-3] Acute pericarditis is a highly morbid diagnosis with complications such as constrictive pericarditis, pericardial effusion or tamponade.[4] Pericarditis arises following injury to the pericardium.[5] Such an injury can occur through a number of mechanisms including viral infection, malignancy, autoimmune disorders, pharmacological effects, uremia, radiation, bacterial infection and trauma.[1] Post-traumatic pericarditis is particularly rare, with few cases reported in the literature, and the pattern of occurrence and pathophysiology are poorly understood. Most reported cases of post-traumatic pericarditis document a history of direct chest trauma such as steering-wheel injury to the chest as seen in motor vehicle accidents or a mechanical strike to the chest.[56]

CASE REPORT

A 19-year-old male was found unresponsive following a 40-foot fall while under the influence of alcohol and psilocybin mushrooms. On arrival to the hospital, he was hemodynamically stable with patent airway. He had a Glasgow Coma Scale of 8 (M5V1E2), a soft abdomen and no obvious signs of trauma other than a gross deformity of his right ankle. Plain radiographic imaging of the chest was normal whereas pelvic and extremity X-rays revealed fractures to the pubic rami, sacrum, right tibia and right fibula. Axial imaging revealed bilateral occult pneumothoraces with bilateral pulmonary contusions, low-grade splenic and liver lacerations, a right superior renal hematoma and numerous vertebral body and transverse process fractures. Additionally, there was a trace amount of pneumomediatinum.[1] Post-traumatic pericarditis complicated by pericardial effusion and cardiac tamponade in a blunt trauma patient

Address for correspondence:
Dr. Alexander T. Hawkins, E-mail: hawkins.alex@gmail.com

Access this article online

Quick Response Code: Website: www.onlinejets.org
DOI: 10.4103/0974-2700.150398
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Four days following arrival to rehabilitation, he began experiencing left shoulder and chest pain exacerbated by lying supine and alleviated when leaning forward. He was pale with a resting heart rate of 106 and a blood pressure of 98/48. Physical examination revealed a pericardial friction rub. His ECG was normal with no ST changes. CT scan of the chest revealed increased pneumopericardium [Figure 2]. Transthoracic echocardiogram (TTE) showed a small pericardial effusion with no evidence of tamponade.

Treatment was initiated for pericarditis with intravenous ketorolac followed by a 2-week course of ibuprofen and a 3-month course of colchicine. The patient’s chest pain and pericardial friction rub resolved and he was discharged to rehabilitation 4 days later.

Three days later, he awoke with diaphoresis, chest pain, left flank and back pain and shortness of breath and was again transferred to the emergency department. On arrival, he was tachycardic to the 120s and hypotensive with a blood pressure of 88/56. Physical exam revealed muffled heart sounds and increased jugular venous distension. TTE showed a 2 cm collection of fluid in the pericardial space and right atrial collapse during diastole. ECG revealed T-wave inversions consistent with a diagnosis of pericardial tamponade with cardiogenic shock. He was transferred to the cardiac catheterization laboratory where he underwent pericardiocentesis and drainage of 550 cc of sanguinous fluid. His symptoms and vitals quickly normalized. The pericardial drain was removed after 48 h when a repeat TTE showed resolution of effusion. He underwent open reduction and internal fixation of his right leg with the orthopedic team.

On hospital Day 13, he was discharged back to rehabilitation on a 6-month course of 0.6 mg colchicine BID and 50 mg indomethacin TID. He recovered well at rehab with no further events and was discharged to home 8 days later.

DISCUSSION

Delayed post-traumatic pericarditis in the blunt trauma patient is an exceedingly rare phenomenon. One case report published in 1960 also reports the occurrence of pericarditis with effusion in a 19-year-old male; however, this patient differed in that he presented with a clear history of chest trauma and received steroid therapy as treatment.[6] A prospective study of 68 patients who experienced blunt chest trauma found only four patients who developed pericardial effusions within 24 h of admission.[7]

The paucity of reported cases of post-traumatic pericarditis has contributed to the significant challenge of predicting and detecting acute pericarditis prior to the appearance of traditional clinical signs. In retrospect, two occurrences may have raised suspicion for pericardial injury. First, serial CT scans revealed an increase in pneumopericardium that preceded the development of clinical signs of pericarditis. It is likely that the pneumopericardium was an indication of pericardial injury. Second, the patient had persistent, unexplained tachycardia during his initial hospitalization, which could also have served as an early sign for pericarditis.

Treatment of acute and recurrent pericarditis has evolved in the last several years. In the past, anti-inflammatory agents such as aspirin, non-steroidal anti-inflammatory drugs (NSAIDs) and steroids were considered standard regimen for treating acute pericarditis. Recently, studies have found that addition of colchicine to this standard regimen decreases recurrence of pericarditis, reduces symptom persistence, lowers rate of pericarditis-related hospitalization and increases rate of remission.[8] The incidence of recurrent or incessant pericarditis is 16% in patients treated with colchicine in addition to standard therapy versus 37.5% in patients who received standard therapy alone.[9] The addition of colchicine was also found to decrease the risk and number of future
recurrences in patients who have already suffered multiple recurrences of acute pericarditis.\cite{9}

Prediction and early diagnosis of pericarditis following blunt trauma remains challenging. We report a case of blunt trauma resulting in delayed pericarditis with pericardial effusion and tamponade. While there were no obvious signs of chest trauma on initial presentation, the patient displayed persistent tachycardia and evolution of pneumopericardium that preceded the development of pericarditis. Our case suggests that these symptoms and signs should increase the index of suspicion for pericarditis in blunt trauma patients. Earlier diagnosis should decrease morbidity by allowing for early initiation of NSAID and colchicine therapy.

ACKNOWLEDGMENT

The authors wish to thank George Velmahos, MD, PhD for his help both with inspiration and review of the manuscript.

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