

# The Development of Pericarditis Following Peripheral Blood Stem Cell Transplantation: A Case Report

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Mr. Z, a 45-year-old man with non-Hodgkin lymphoma, underwent six cycles of CHOP (cyclophosphamide, adriamycin, vincristine, and prednisone) and rituximab, resulting in remission of his disease. However, plans for an autologous peripheral stem cell transplantation were delayed because of cellulitis in his left leg. Laboratory cultures revealed that methacillin-resistant *Staphylococcus aureus* (MRSA) was the cause, and he received a course of IV vancomycin and cefepime. After successful treatment, Mr. Z was evaluated for a stem cell transplantation. A chest computed tomography scan showed mild fullness around his mediastinum, and a multiple gated acquisition scan showed left ventricular ejection fraction of 62%. A level less than 50% may indicate cardiotoxicity or cardiac compromise. Mobilization chemotherapy of cytoxan and etoposide was administered, and peripheral blood stem cell collection was initiated after treatment.

During the interim between stem cell collection and readmission for high-dose chemotherapy, Mr. Z developed shortness of breath and a productive cough. He was diagnosed with pneumonia and admitted to a local hospital for a weeklong course of IV cefepime and tobramycin.

A chest computed tomography scan and x-ray revealed a pulmonary edema and small pleural effusions. A transthoracic echocardiogram showed concentric left ventricular hypertrophy with low-normal left ventricular systolic function, severe hypokinesia of the

posterior basilar segment, and hypokinesia of the inferior basilar segment. A repeat multiple gated acquisition scan revealed left ventricular ejection fraction of 56%, lower than the previous measure. Mr. Z improved and was discharged with a weeklong supply of oral levofloxacin (750 mg).

Mr. Z was readmitted for stem cell transplantation. Cultures were obtained, and immunoglobulin G levels indicated that cytomegalovirus, varicella, and herpes simplex virus I and II were present. Prophylactic doses of acyclovir, levofloxacin, and fluconazole were started two days prior to the planned transplantation and continued throughout Mr. Z's hospital stay.

Mr. Z was given high-dose cytoxan, carmustine, and etoposide for his myeloablation chemotherapy, followed by peripheral stem cell rescue. His white blood cell count after chemotherapy averaged 0.02 k/ul. Mr. Z's recovery was normal until the fourth day after transplantation, when he complained of chest pain and described it as constant midsternal pressure. Mr. Z received 4 mg of IV morphine sulfate and 0.4 mg of sublingual nitroglycerin, which brought moderate relief. An electrocardiogram (EKG) demonstrated sinus rhythm and cardiac enzymes within normal limits (creatinine kinase < 20 ul; troponin I < 0.03 ng/ml). Increased midsternal pres-

sure about five hours after the initial onset prompted additional morphine and nitroglycerin treatment. A second EKG showed diffuse ST elevation across the precordium, and a physical examination revealed a pericardial friction rub. The patient remained afebrile with stable vital signs. Repeat cardiac enzymes were again within normal limits; therefore, blood cultures were obtained and Mr. Z was started on IV vancomycin 1.5 g every 12 hours and IV cefepime 2 g every 8 hours for suspected bacterial pericarditis (Hughes et al., 2002). Mr. Z remained on vancomycin, cefepime, levofloxacin, fluconazole, and acyclovir for the remainder of his hospital stay, and his chest pain dissipated without complications.

## Definition

The pericardium is a fluid-filled sac that surrounds the heart and serves as a protective barrier (see Figure 1). The pericardium is made up of two layers, separated by 15–20 ml of fluid: the parietal pericardium, which is a fibrous outer layer, and the visceral pericardium, which is the inner layer that lays directly over the epicardium of the heart (Marinella, 1998). Pericarditis occurs when the pericardium becomes inflamed, an adverse side effect of some cancer treatments (Ross & Grauer, 2004).

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