

IMAGING VIGNETTE

BEGINNER

CLINICAL VIGNETTE

Rapidly Progressive Atrial Mass and Cardiac Tamponade



A Rare Presentation of Multiple Myeloma

Jeet Ram Kashyap, MD, DM,^a Anita Tahlan, MD, DM,^b Suraj Kumar, MD, DM,^a Sreenivas Reddy, MD, DM,^a Reetu Kundu, MD^b

ABSTRACT

Cardiac involvement in multiple myeloma is rare. We report a rapidly progressive atrial mass and plasma cell-infiltrated pericardial effusion with tamponade. Bone marrow biopsy and plasma immunoelectrophoresis confirmed multiple myeloma (Revised International Staging System Stage III). The patient died within 18 weeks of presentation, suggesting aggressive disease with poor prognosis. (**Level of Difficulty: Beginner.**) (J Am Coll Cardiol Case Rep 2020;2:279-81)
© 2020 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Plasma cell-infiltrated pericardial effusion (PE) is a rare manifestation of metastatic extramedullary myeloma, occurring in <1% of cases with an average survival of 11 to 14 weeks (1,2). We present a rare case of a very large, rapidly progressive atrial mass and plasma cell-infiltrated PE.

A 64-year-old man presented with progressive dyspnea of 1-week duration. His pulse rate was 126/min and blood pressure 110/70 mm Hg. Echocardiography revealed a dumbbell-shaped mass (2.32 × 2.32 cm and 3.24 × 3.44 cm) on each side of the fossa ovalis and a small PE (Figure 1A, Video 1) that progressed rapidly to tamponade over 5 weeks (Figures 1B and 1C, Videos 2 and 3). Computed tomography of the thorax and abdomen confirmed the mass (5.8 × 2.7 cm), large PE, and lobulated pleural masses extending into the pleura, eroding the lower ribs (Figure 1D). Cytology of the pericardial fluid and bone marrow biopsy revealed a large number of plasma cells (67%) (Figures 1E and 1F). Plasma electrophoresis showed monoclonal band in the gamma region (5.57 g/dl). Serum β₂-microglobulin level was 22.66 g/l, albumin 2.56 g/dl (range 3.5 to 5.0 g/dl), and lactate dehydrogenase 550 U/l (range 140 to 280 U/l), suggesting Revised International Staging System Stage III. Given the extensive dissemination of disease and high surgical risk, systemic therapy with thalidomide and prednisolone was administered. However, the mass increased in size (Figure 1C, Videos 3 and 4), and the patient died 18 weeks after presentation.

DISCUSSION

A large atrial mass with cardiac tamponade is a very rare manifestation of multiple myeloma (MM) (1,2). Among the cardiac manifestations of MM, pericardial infiltration is the most common, followed by atrial masses and ventricular infiltration (2). Only a few cases of large atrial masses have been reported, but such an aggressive

From the ^aDepartment of Cardiology, Government Medical College & Hospital, Chandigarh, India; and the ^bDepartment of Pathology, Government Medical College & Hospital, Chandigarh, India. The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Informed consent was obtained for this case.

Manuscript received August 26, 2019; revised manuscript received October 31, 2019, accepted November 3, 2019.

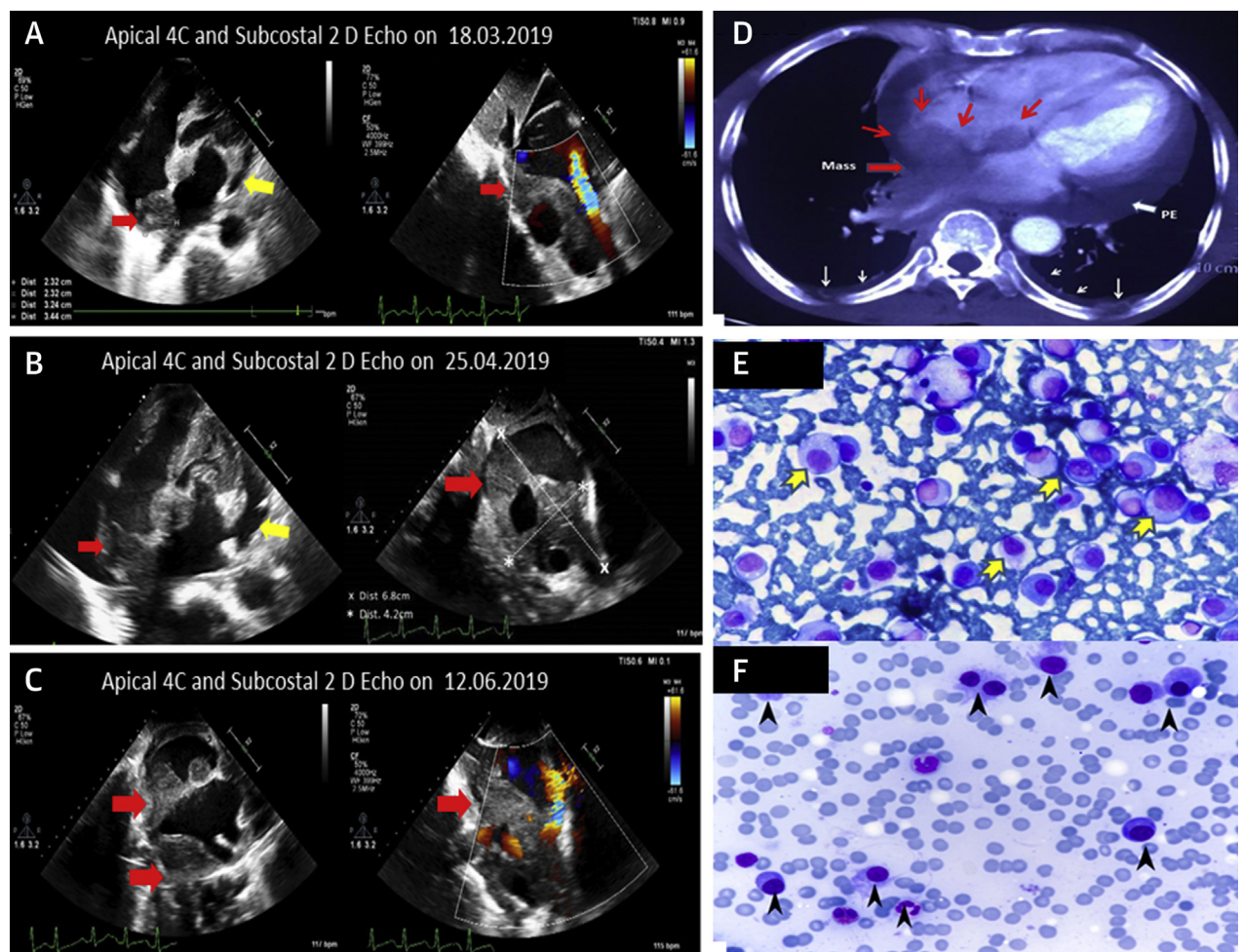
**ABBREVIATIONS
AND ACRONYMS**

MM = multiple myeloma

PE = pericardial effusion

mass has not been described. Because the right atrium is the most proximal chamber in contact with the systemic venous return, it probably receives maximum deposits because of the interaction between cell surface adhesion molecules on the plasma cells and permissive growth factors on the endothelial lining of the right atrium (3). Treatment consists of pericardiocentesis along with chemotherapy, steroids, and radiotherapy alone or in combination (1-3). Immunotherapy with daratumumab or elotuzumab is a promising novel treatment option for advanced MM with the potential for long-term remission but is expensive.

FIGURE 1 Color Doppler Echocardiography




(A) Apical 4-chamber (4C) and subcostal views showing dumbbell-shaped interatrial septum mass (red arrows) with mild PE (yellow arrow). Sequential echocardiography (Echo) at 5 weeks **(B)** and 11 weeks **(C)** showing increase in size of mass and PE. **(D)** Computed tomographic scan of the chest showing a mass (red arrows) and a large PE (thick white arrow). Short white arrows indicate pleural effusion. Long white arrows indicate erosion of ribs. **(E, F)** Pericardial fluid cytology (yellow arrows) **(E)** and bone marrow biopsy **(F)** showing 67% plasma cells (black arrowheads) (40× magnification). 2D = 2-dimensional; PE = pericardial effusion.

ADDRESS FOR CORRESPONDENCE: Dr. Jeet Ram Kashyap, Room No. 538, Block-D, Level 5, Government Medical College & Hospital, Sector-32, Chandigarh 160030, India. E-mail: jeetramkashyap@yahoo.com.

REFERENCES

1. Skipina TM, Sane DC, Cui C, Song S, Phillips SG, Jarrett RW. A plasma cell-based pericardial effusion leading to tamponade in a patient with multiple myeloma—a case report and review of the literature. *Cardiovasc Pathol* 2019;40:41-6.
2. Coakley M, Yeneneh B, Rosenthal A, Fonseca R, Mookadam F. Extramedullary cardiac multiple myeloma—a case report and contemporary review of the literature. *Clin Lymphoma Myeloma Leuk* 2016;16:246-52.
3. Fernandez LA, Couban S, Sy R, Miller R. An unusual presentation of extramedullary plasmacytoma occurring sequentially in the testis, subcutaneous tissue, and heart. *Am J Hematol* 2001; 67:194-6.

KEY WORDS atrial mass, cardiac tamponade, extramedullary plasmacytoma, multiple myeloma, plasma cells

 **APPENDIX** For supplemental videos, please see the online version of this paper.