

## BRIEF REPORT

# Cardiac tamponade; a rare presentation of mediastinal lymphoma

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### ABSTRACT

Malignant lymphoma can involve the mediastinum as a primary lesion or part of dissemination process. Compression on nearby structures determines the clinical picture. Few cases presenting initially by pericardial effusion had been reported. We present a 48-year-old female patient emergently managed for cardiac tamponade initially by pericardiocentesis then by surgical drainage. Large mediastinal mass had been found intraoperatively that proved to be non Hodgkin lymphoma.

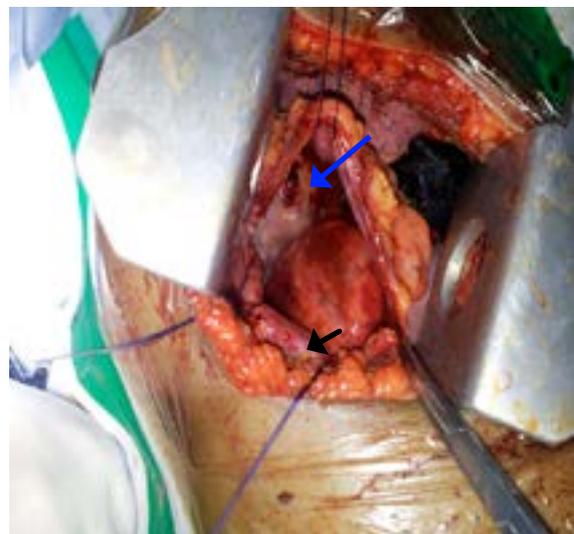
**Key words:** malignant lymphoma, cardiac tamponade, mediastinal widening, Hodgkin's disease

Malignant lymphoma can originate in or spread to the mediastinum.<sup>1</sup> Variety of clinical manifestations might be encountered. Pericardial effusion as a first presenting condition of primary mediastinal lymphoma is very rare.<sup>2</sup> Here we present a case of non Hodgkin lymphoma presenting initially by cardiac tamponade.

A 48-year-old female patient presented to emergency department with shortness of breath started 3 days ago and progressively increasing. On clinical examination she was conscious. Her blood pressure was 85/50 mmHg, pulse 120 beats/min., respiratory rate 35/min. and body temperature 37°C. ECG did not show any significant changes apart from sinus tachycardia. Portable chest x ray showed enlarged cardiac silhouette. Bedside transthoracic echocardiography demonstrated massive pericardial effusion and impending tamponade. The patient was shifted urgently to ICU where sonographically guided pericardiocentesis was attempted. About 50 mL bloody fluid was aspirated from the pericardial cavity and no more drainage could be retrieved. Few minutes later, the patient became shocked and the amount of pericardial fluid increased as seen by echocardiography. We suspected cardiac injury induced by the needle during pericardiocentesis. The patient was in critical condition and was shifted emergently to operating room. The anesthetic management was challenging. The aim was to maintain hemodynamic stability during induction and after release of tamponade. Central venous line was inserted. General anesthesia was started by benzodiazepine and maintained by nitric oxide and fentanyl combined with pancuronium for skeletal

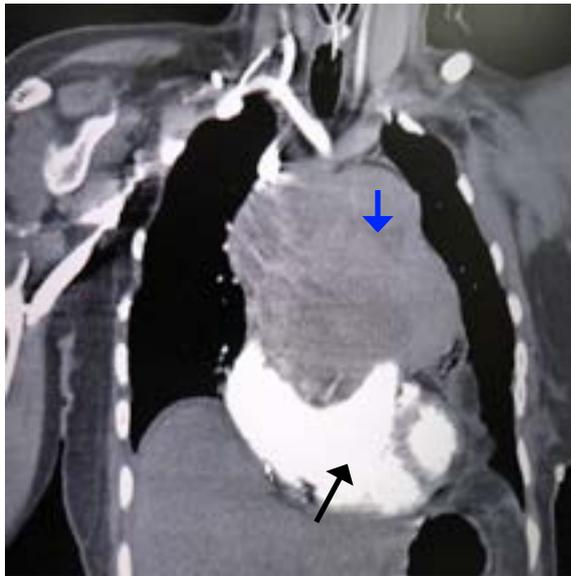
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**Figure 1,** Mediastinal swelling with bleeding spots (blue arrow) and pericardial edge retracted by traction suture (black arrow).

muscle relaxation. Continuous monitoring of arterial and central venous pressure was achieved. Left anterior thoracotomy was made in the submammary area and chest was entered through the 4th interspace. The pericardial sac was tense and the pericardium was opened anterior to the phrenic nerve. About 800 mL of blood was gradually suctioned from the pericardial cavity. No cardiac injuries could be identified. The pericardium was inspected and a large swelling was found in the middle mediastinum compressing the heart. A spot on the surface of the swelling was found bleeding into the pericardial cavity. It was controlled by applying an absorbable hemostat „surgicel®“. Since the patient was in critical condition and we did not know about the nature of this mediastinal swelling and to avoid further bleeding, we did not take a biopsy. Pericardiopleural window was created posterior to the phrenic nerve and the chest was closed after inserting a thoracic drain. The patient was shifted to



**Figure 2**, CT chest with contrast (coronal view) showing the mediastinal mass (blue arrow) compressing the heart (black arrow).

ICU intubated. She was hemodynamically stable and weaned from mechanical ventilation after 24 hours. Chest X-ray showed normal cardiac size but the superior mediastinum was wide. Chest CT with contrast revealed big mediastinal mass compressing the heart and encroaching upon the pulmonary vessels. The patient was stable. Her respiratory symptoms improved. No more pericardial effusion was found as proved by echocardiography. Analysis of hemorrhagic pericardial fluid taken during the operation did not show malignant cells. The patient was referred to specialized oncology centre for further management. CT guided biopsy was taken there and histopathologic examination diagnosed the mass as non Hodgkin lymphoma. She underwent a protocol of chemo and radiotherapy with marked clinical improvement.

The reported incidence of mediastinal involvement is 16-24% in non Hodgkin lymphoma (NHL).<sup>3</sup> Mediastinal lymphoma presents early due to rapid growth of the tumor and resultant compression on nearby structures. The clinical manifestations are variable including pain, cough, dyspnea, dysphagia, superior vena cava syndrome, phrenic nerve palsy, and hoarseness.<sup>4</sup> Pericardial effusion is rare and signifies poor prognosis.<sup>5</sup> The incidence of cardiac involvement in lymphoma is 35-40% of cases. It ranges from microscopic foci of tumor cells to gross malignant lymphocytic infiltration replacing the myocardium or damaging the valves.<sup>6</sup> In our case the first presentation of NHL was cardiac tamponade. However, the patient developed dyspnea in the last few days preceding hospital admission. It had been stated that triggers for tamponade in patients with pericardial effusion include hypovolemia, paroxysmal tachyarrhythmia, intercurrent acute pericarditis and influx of blood.<sup>7</sup> We think that bleeding from the tumor into the pericardial sac aggravated the condition resulting in tamponade. It is known that the pericardial sac is distensible and

the rise of intrapericardial pressure is determined by the rate of fluid accumulation within the pericardial cavity.<sup>8</sup> The classical clinical findings of tamponade include features of venous hypertension, pulsus paradoxus and orthopnea. A minority of patients with tamponade demonstrate all the signs of Beck's triad that are: hypotension, elevated jugular venous pressure, and a muffled heart sounds. This case is interesting because pericardial effusion was the only finding on clinical examination. No associated hepatosplenomegaly, lymphadenopathy, or skin lesions could be found. The presence of mediastinal mass together with negative serology for HIV ruled out primary cardiac lymphoma. The initial diagnostic workup starts with chest x ray which may show enlarged cardiac silhouette and widened mediastinum. ECG may be normal or may show non-specifically changed (ST-T wave), and electrical alternans. Echocardiography is very valuable in diagnosis of pericardial effusion, determining evidence of tamponade and search for the cause. It also guides pericardiocentesis and thus minimizes the risk cardiac injury.<sup>9</sup> CT scan helps characterize the mediastinal mass and its relations to surrounding structures.<sup>10</sup> Pericardial effusion and tamponade complicating mediastinal lymphoma is an oncologic emergency that mandates proper management.<sup>11</sup> Sonographically guided pericardiocentesis is the initial life saving procedure and is effective in relieving tamponade and stabilizing the patient.<sup>8</sup> In cases of difficulty, incomplete drainage, recurrence or loculated effusion open surgical drainage is indicated. This can be accomplished through either subxiphoid or left anterior thoracotomy approach. We chose the latter because we were expecting cardiac injury complicating pericardiocentesis. Proper anesthetic management is critical, and the aim is to avoid bradycardia, maximize left ventricular function by optimum volume state, and maintain sympathetic tone and low airway pressure.<sup>12</sup> Survival in such cases is influenced mainly by systemic control of underlying neoplasm.<sup>13</sup>

**Conclusion:** Mediastinal lymphoma rarely presents clinically for the first time by pericardial effusion and tamponade. The first priority is to relieve tamponade and save patient life. Proper evaluation and perioperative care are essential and may be challenging in hemodynamically unstable patients. A team approach including cardiologist, surgeon, anesthetist, radiologist and oncologist is necessary for favorable outcome.

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