

Successful Pericardiocentesis for Cardiac Tamponade in a Patient with Thrombocytopenic Acute Lymphocytic Leukemia

Trombositopenik Akut Lenfositik Lösemili Hastada Kardiyak Tamponad ve Başarılı Perikardiyosentez

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Abstract

Cardiac tamponade (CT) as a clinical manifestation of lymphomas is extremely rare. Although leukaemic infiltration of the pericardium is frequently observed at post-mortem, clinically evident cardiac tamponade is also rare. We present a case of cardiac tamponade complicating leukaemia. The patient had cardiac tamponade and severe thrombocytopenia during chemotherapy due to relapsed and refractory acute lymphoblastic leukemia (ALL). We experienced complete resolution of the pericardial effusion without any bleeding complications after urgent pericardiocentesis within 15 days after successful ibuprofen-colchicine therapy. The exciting feature of this paper is that rescue pericardiocentesis may be lifesaving despite crucial states, such as severe thrombocytopenia. (*JAEM 2012; 11: 188-9*)

Key words: Acute Lymphoblastic Leukemia (ALL), Chronic Myeloid Leukemia (CML), Cardiac Tamponade (CT)

Özet

Lenfomaların klinik belirtisi olarak kardiyak tamponadların (KT) görülme sıklığı çok nadirdir. Perikardın lösemik infiltrasyonunun post-mortem dönemde sık görülmesine rağmen klinik olarak kardiyak tamponadların görülmesi nadirdir. Biz lösemide gelişen kardiyak tamponad vakasını sunmak istiyoruz. Tekrarlayan ve refraktör akut lenfositik lösemiden (ALL) dolayı kemoterapi alan hastanın kardiyak tamponadı ve ciddi trombositopenisi mevcuttu. On beş gün başarılı bir şekilde ibuprofen-kolşisin tedavisi gören hastada acil ve zorunlu perikardiyosentez sonrası herhangi bir kanama komplikasyonu gelişmeden perikardiyal effüzyonun tamamen rezolüsyonunu gözlemledik. Ağır trombositopeni gibi kritik durumlara rağmen acil perikardiyosentezin hayat kurtarıcı olması bu olgunun heyecan verici özelliğidir. (*JAEM 2012; 11: 188-9*)

Anahtar kelimeler: Akut Lenfoblastik Lösemi (ALL), Kronik Miyeloid Lösemi (KML), Kardiyak Tamponad (KT)

Case Report

We evaluated a 22-year-old patient complaining of acute breathlessness and pretibial edema in relapsed and refractory acute lymphoblastic leukemia (ALL). The patient was under rituximab-cyclophosphamide, vincristine, dexamethasone, doxorubicin (R-HCVAD) alternating with R-rituximab, methotrexate-cytarabine (MTX-ARAC) chemotherapies and he had a pancytopenia including severe thrombocytopenia. On his physical examination: The heart rate was 120 beats/min with evidence of pulsus paradoxus and the blood pressure was 85/60 mmHg. The jugular venous pressure was elevated up to the angle of the jaw. The cardiac apex was ill-defined and heart sounds were faint. There was no murmur or pericardial friction rub. He had severe pretibial edema because of hypoalbuminemia and acute right ventricular dysfunction observed by echocardiography. Electrocardiography revealed a poor R wave progression in all pre-

cordial derivations and sinus tachycardia. Laboratory data showed haemoglobin of 9.2 g/dL, white blood cell (WBC) count of 2.8×10^4 K/uL with 93% blast cells, platelet count of 5×10^3 /uL. International Normalized Ratio (INR) was 2.94 and activated Partial Thromboplastin Time (aPTT) was 56 sec. Chest radiogram showed moderate right sided pleural effusion with a normal cardiothoracic index. Bedside echocardiography revealed a large pericardial effusion with gross cardiac oscillation and diastolic collapse of the right ventricle and atrium (Figure 1). Mitral inflow pattern changed in expiration more than 25% of inspiration values and tricuspid inflow pattern changed in inspiration more than 40% of expiration values. Vena cava size was 2.3 cm and there was no change with respiration, particularly during inspiration. Echocardiographic and clinical findings indicated cardiac tamponade. Despite treatment with R-HCVAD regimen, the patient had no response to the treatment and his clinical condition was deteriorated. Because of the patient's hemodynamic instability, we

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decided on a rescue pericardiocentesis procedure considering the risk of bleeding complications. Pericardiocentesis was performed under thrombocyte and plasma transfusions. Three hundred milliliters (300 mL) of non-hemorrhagic fluid was obtained and the patient's clinical status improved dramatically. We did not encounter any bleeding complications due to the procedure. Lymphoblastic infiltration was detected in the cytopathological examination of bone marrow and pericardial material (Figure 2). Ibuprofen and colchicine were started immediately. The patient was discharged with stable hematological parameters under treatment. Control echocardiography showed minimal pericardial effusion within 15 days after discharge. The patient is still alive.

Discussion

Leukaemic infiltration of the pericardium is rarely diagnosed clinically and only a few cases of cardiac tamponade resulting from leukaemic infiltration have been reported. These case presentations were reported in patients with chronic myeloid leukaemia (CML) (1, 2) and acute lymphatic leukemia (ALL) (3-7). We present a case of cardiac tamponade in a patient with ALL. The importance of this case report is the presentation in ALL and the hazardous pericardi-

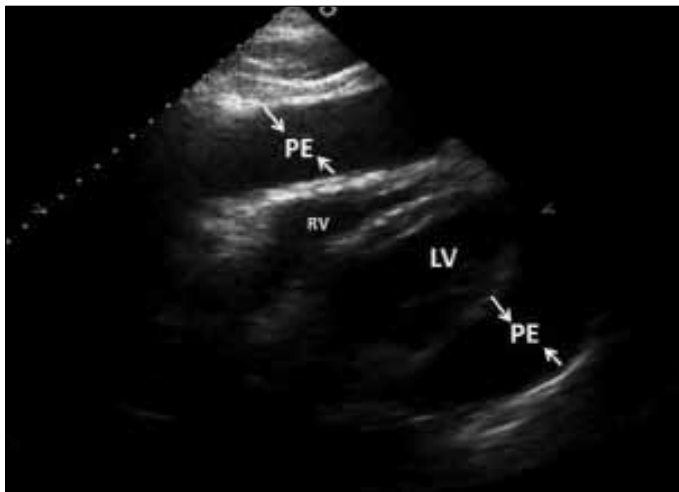


Figure 1. Transthoracic echocardiography shows massive pericardial effusion (arrow) in a patient with ALL in subcostal view
LV: left ventricle, RV: right ventricle, PE: pericardial effusion

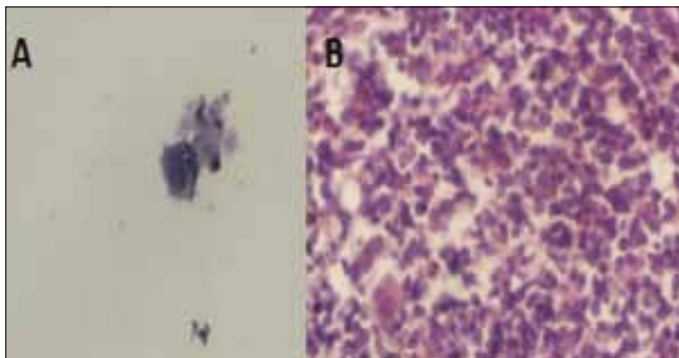


Figure 2. Pericardial (A) and bone marrow (B) materials shows lymphoblastic infiltration

ocentesis due to severe thrombocytopenia. Pericardial effusion in leukaemic patients may be caused by any of several conditions: cell infiltration with (or without) extramedullary haematopoiesis; haemorrhagic diathesis due to thrombocytopenia or therapeutic side effects; infection and other effects of anti-leukaemic drugs (8, 9). In this patient, the pericardial effusion occurred rapidly under chemotherapy and he had severe thrombocytopenia, and the coexistent pleural effusion was proven to be leukaemic in origin. Pericardiocentesis can be a challenging procedure in these unusual circumstances. Taking into account the profit and loss status we had to make an appropriate decision. We decided to perform the pericardiocentesis procedure considering the risk of bleeding complications. Despite the severe thrombocytopenia, we did not encounter bleeding complications, such as hemopericardium, pleural hemo-mediastinum or skin hemorrhagia.

Conclusion

Pericardial effusion should be considered in patients with leukaemia who experience sudden onset of cardiac symptoms. Its management should however be individualized. Pericardiocentesis is required in conditions such as resistant pericardial effusion to chemotherapy, severe symptoms, clinical deterioration or collapse due to pericardial effusion. Infiltration of the pericardium with effusion should therefore be considered in every patient with leukaemia, for both therapeutic and prognostic reasons. Cardiologists, internists, and emergency medical personnel should be aware of these conditions and make a decision in favor of the patient's hemodynamic urgency.

Conflict of Interest

No conflict of interest was declared by the authors.

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