CASE REPORT

Eosinophilic myocarditis associated with eosinophilic pneumonia and eosinophilia following antibiotic and narcotic analgesic treatment

Antibiyotik ve narkotik analjezik tedavisini takiben ortaya çıkan eosinofilik pnömoni ve eozinofili ile ilişkili eozinofilik miyokardit

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Summary– Eosinophilic myocarditis (EM) is a rare form of myocarditis that usually presents with heart failure due to eosinophilic infiltration. EM is often a component of hypereosinophilic syndrome (HES). HES is a rare disorder characterized by persistent, marked eosinophilia combined with organ system dysfunction. A 38-year-old man was admitted to emergency services with left inguinal pain and fever, and was hospitalized with diagnosis of nephrolithiasis and urinary tract infection. Intravenous antibiotic therapy of 3 grams meropenem per day and analgesic of 50 mg pethidine per day were administered. Typical angina pectoris and dyspnea developed approximately 24 hours after treatment. Rash on the chest, and diminished bilateral lung sounds and rales were observed. Nonspecific changes were present on electrocardiogram. Laboratory analysis showed progressively increasing levels of cardiac biomarkers and eosinophilia. Peripheral blood smear, bone marrow aspiration, and biopsy demonstrated eosinophilia. Chest x-ray revealed diffuse, bilateral interstitial and reticulonodular infiltrates. Transthoracic echocardiography showed thickened left ventricle. Coronary angiography revealed normal coronary arteries. EM was suspected, endomyocardial biopsy was performed, and pathologic specimen confirmed the diagnosis. Corticosteroid treatment was initiated, and within 1 day, angina pectoris and dyspnea had dramatically reduced, and cardiac biomarkers and eosinophil count had decreased. Normal chest x-ray was observed after 72 hours. The patient was discharged with steroid treatment.

Özet– Eozinofilik miyokardit (EM), miyokarditin nadir gözlenen bir formu olup sıklıkla kalp yetersizliği ile beraber gözlenmektedir. Eozinofilik miyokardit sıklıkla hipereozinofili sendromunun (HES) bir bileşenidir. Hipereozinofili sendromu nadir bir hastalık olup, eozinofili ile kendini gösteren organ sistem bozukluğudur. Otuz sekiz yaşında erkek hasta acil servise sol inguinal ağrı ve ateş ile başvurdu. İdrar yolu enfeksiyonu ve nefrolitiyazis tanısı ile hastaneye yatırıldı. Antibiyotik (meropenem günde 3 gram) ve analjezik (pethidin günde 50 mg) tedavisi intravenöz başlandı. Göğüste kırmızı lekeler ve akciğerlerde iki taraflı ral ve akciğer seslerinde azalma saptandı. Elektrokardiyogramda spesifik bir değişiklik gözlenmedi. Laboratuvar değerlerinde kardiyak biyobelirteçlerde yükseklik ve eozinofili gözlendi. Periferik kan yayması ve kemik iliği biyopsisi eozinofili ile uyumluydu. Akciğer grafisinde yaygın iki taraflı interstisyel ve retikülonodül infiltrasyonlar gözlendi. Transtorasik ekokardiyografide sol ventrikül kalınlaşması saptandı. Koroner anjiyografide koroner arterler normal olarak değerlendirildi. Eozinofilik miyokarditten şüphelenilen olguya kesin tanı ve tedavi açısından endomiyokardiyal biyopsi yapıldı. Patolojik değerlendirmeler EM tanısını doğruladı. Kesin tanı konulduktan sonra hastaya kortikosteroid tedavisi başlandı. Tedaviden bir gün sonra, hastanın göğüs ağrısı ve nefes darlığı belirgin bir şekilde azaldı ve aynı zamanda kardiyak biyobelirteçler ve eozinofil değerinde azalma gözlendi; 72 saat sonra akciğer grafisi normal olarak değerlendirildi. Hasta kortikosteroid tedavisi ile taburcu edildi.

A rare form of myocarditis that usually presents with heart failure due to eosinophilic infiltration,[1] eosinophilic myocarditis (EM) is often a component of hypereosinophilic syndrome (HES), a rare disorder characterized by persistent and marked eosinophilia combined with organ system dysfunction. The most common organ involvements are hematologic, cardiovascular, cutaneous, neurologic, pulmo-

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nary, splenic, hepatic, ocular, and gastrointestinal. It can present secondary to leukemia, allergic disease, granulomatous disease, parasite infection, connective tissue disease, vasculitis, and primary hypereosinophilic syndrome.[2] Eosinophilic infiltration causes endomyocardial inflammation and necrosis, and is often associated with peripheral blood eosinophilia.[3]

Abbreviations:

EM *Eosinophilic myocarditis*
HES *Hypereosinophilic syndrome*

Endomyocardial biopsy is the gold standard for definitive diagnosis of EM. Blood count to determine eosinophilia, chest x-ray to determine pulmonary infiltration, and echocardiogram may also aid diagnosis.

CASE REPORT

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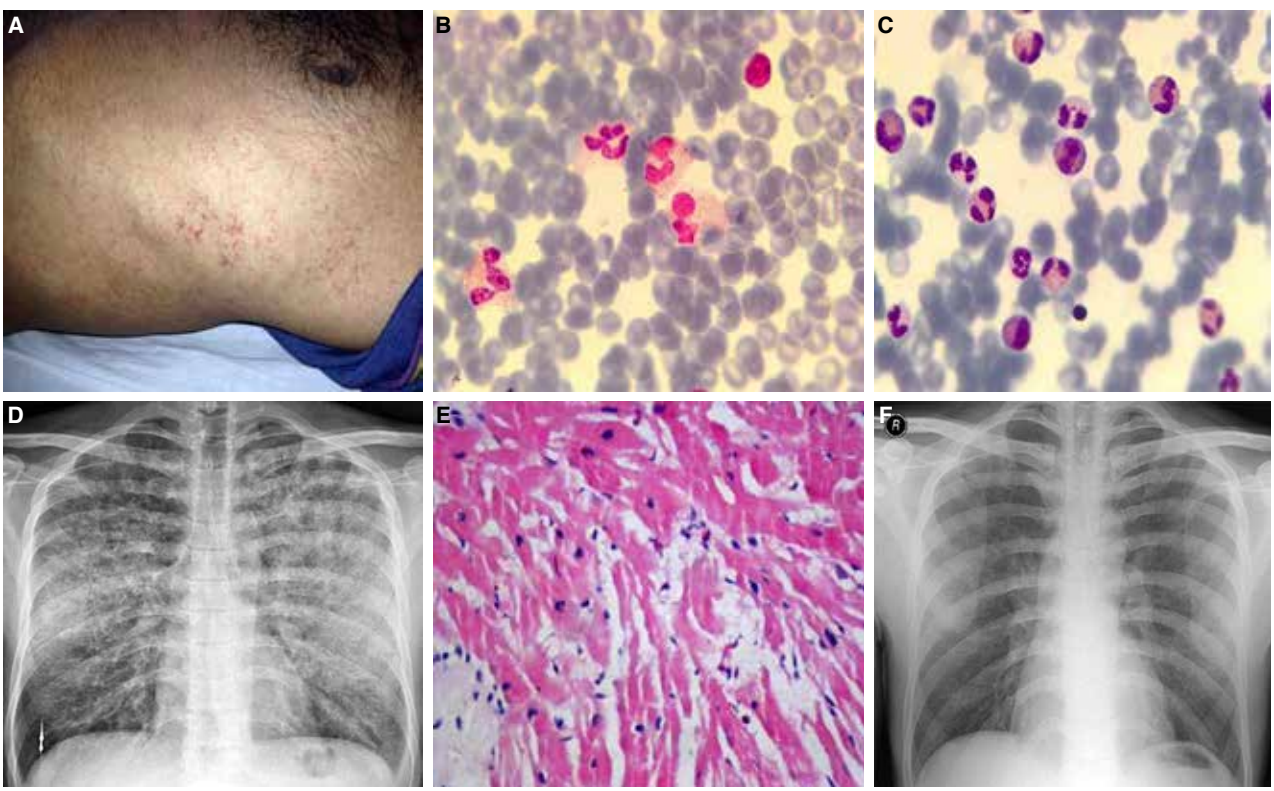

Figure 1. **(A)** Rash on the patient's chest. **(B)** Eosinophilia on peripheral blood smear. **(C)** Bone marrow aspiration and biopsy. **(D)** Chest x-ray demonstrating bilateral interstitial and reticulonodular infiltrates. **(E)** Pathologic specimen of endomyocardial biopsy. **(F)** Chest x-ray following treatment.

DISCUSSION

EM is characterized by diffuse or focal myocardial inflammation with eosinophilic infiltration, often in association with peripheral blood eosinophilia and pulmonary infiltration. According to the literature, cardiac involvement occurs in 54–82% of cases. Prognosis is associated with magnitude of cardiac involvement. Correct diagnosis and appropriate treatment is crucial, as delays can be fatal.[4] Five-year mortality of EM is approximately 30%. EM has been observed in 0.5% of unselected autopsy series and in more than 20% of hearts explanted from cardiac transplant recipients. Diverse etiologies have been described, including HES, Loeffler endocarditis, and tropical endomyocardial fibrosis. The most common cause of EM is medication, particularly antibiotics such as penicillin, cephalosporin, tetracycline, streptomycin, chloramphenicol, and amphotericin B, anticonvulsants, anti-inflammatory drugs, diuretics, amitriptyline, methyldopa, sulfonylureas, tetanus toxoid, dobutamine, digoxin, captopril, and enalapril.[5-7] Peripheral blood count is important. However, eosinophilia is not present in some cases, and EM may not be suspected. Clinical presentation is nonspecific and has a wide spectrum. Patients may present with fever, skin rashes, chest pain, shortness of breath, symptoms of heart failure, and electrocardiogram abnormalities including conduction delays, sinus tachycardia, and ST-T abnormalities. While peripheral blood count, cardiac biomarkers, chest x-ray, and echocardiography aid diagnosis, the gold standard for definitive diagnosis is endomyocardial biopsy. When myocarditis is suspected, determination of exact etiology has important implications for prognosis and treatment. Differentiating specific types of myocarditis with endomyocardial biopsy can lead to appropriate therapy. Cardiac involvement progresses in 3 stages. The first is the acute necrotic stage; most patients are asymptomatic, and cellular infiltration and inflammation, myocardial necrosis, and eosinophilic granulomas are detected in pathological assessment. The second, thrombotic, stage is characterized by the formation of intracardiac mural thrombus and resulting thromboembolism. The third, fibrotic, stage is characterized by fibrosis of the myocardium, resulting in restrictive cardiomyopathy. Treatment begins with discontinuation of agent responsible, followed by immunosuppression with corticosteroids.[6] Early initiation of steroid therapy improves clinical outcomes and reduces mortality. Severe cardiac failure requiring left ventricular assistance and, ultimately, heart transplantation, has been reported.

In the present case, EM was a component of HES. Though symptoms and laboratory findings (elevated cardiac biomarkers) mimicked acute coronary syndrome, eosinophilia, rash, and bilateral interstitial and reticulonodular infiltrates led to suspicion of HES with EM. Endomyocardial biopsy showed eosinophilic infiltration and myocardial necrosis. Reduction of symptoms and left ventricular thickening was achieved after proper diagnosis and corticosteroid treatment.

In conclusion, EM is a rare clinical presentation and may be overlooked. EM should be considered in patients with history of allergy and asthma, presenting with chest pain or symptoms of heart failure.

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