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CASE REPORT / OLGU SUNUMU

Mass-forming extramedullary hematopoiesis mimicking Hodgkin's lymphoma

Kitle oluşturarak Hodgkin lenfomayı taklit eden ekstramedüller hematopoez olgusu

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ABSTRACT

Extramedullary hematopoiesis (EMH) refers to the proliferation of hematopoietic precursors outside the bone marrow. EMH often presents as a mass lesion in several areas of the body. In this report, we present a case misdiagnosed and explain the cause of the diagnostic error.

Keywords: Extramedullary hematopoiesis, Posterior mediastinal mass, Hemolytic anemia

ÖZ

Ekstramedüller hematopoez (EMH), hematopoetik öncül hücrelerin kemik iliği dışında çoğalması olarak tanımlanmaktadır. EMH, vücudun farklı bölgelerinde kitlesel lezyon olarak karşımıza çıkabilmektedir. Bu olgu sunumunda; ayırıcı tanı, bir tanı hatası ve olası tuzaklar üzerinden irdelenmektedir.

Anahtar kelimeler: Ekstramedüller hematopoez, Arka mediasten kitlesi, Hemolitik anemi

Introduction

Extramedullary hematopoiesis (EMH) is the proliferation of hematopoietic precursors outside the bone marrow. EMH usually presents as a mass lesion in several parts of the body such as the spleen, liver, lymph nodes and paravertebral regions among others [1]. EMH is usually asymptomatic; however, a thorough differential diagnosis is crucial to differentiate EMH from other diseases. Herein, we report a case of EMH initially misdiagnosed as a neoplasm.

Case Report

A 38-year-old male patient was admitted to the emergency room with acute chest pain. He had a history of hemolytic anemia for the past 18 years but had been noncompliant with clinical follow-up. Two months ago, he had a pulmonary hematoma due to thoracic trauma. His brother suffers from hereditary spherocytosis.

His body temperature, heart rate and blood pressure were normal. Splenomegaly was detected during palpation. Laboratory analysis results were as follows: white blood cells (WBC) 4.100/uL, hemoglobin 9g/dl, platelet 160.000/uL, AST 108U/L, ALT 95U/L, LDH 607U/L, total bilirubin 7.25 mg/dL, direct bilirubin 1.12 mg/dL and uric acid 8.56

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mg/dL. Direct and indirect Coombs tests and hepatitis serologic tests were negative. A peripheral blood smear showed normal thrombocytes, hypochromia, anisocytosis, polychromasia and 5–6 target cells in each area. In hepatobiliary ultrasonography, longitudinal length of the liver was 183 mm, whereas the spleen was measured 259 mm. Single-photon emission computed tomography (SPECT) showed a 10 ×8 cm hypodense mass lesion neighbouring the upper pole of the left kidney and extending into the posterior part of the left hemithorax and splenomegaly (Figure 1). Excisional biopsy of the mass lesion had been diagnosed as Hodgkin's lymphoma, classical type, mixed cellular subtype – in an outside hospital.

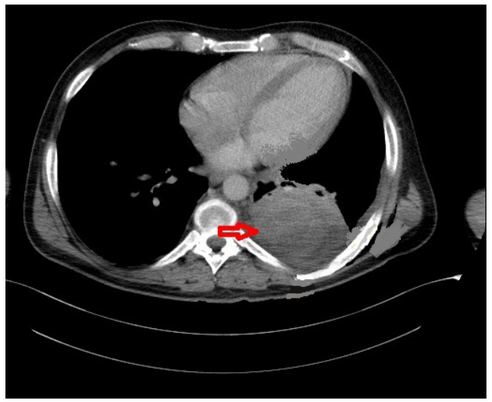

Figure 1. Radiologic image of the mass lesion (red arrow).

Finally, the patient was referred to our Hematology and Oncology Department. Hemoglobin levels declined fast and the spleen was increasing in size progressively. Hemoglobin electrophoresis, osmotic fragility, glucose-6 phosphate dehydrogenase and pyruvate kinase test results were normal. No paroxysmal nocturnal hemoglobinuria clone was detected. Positron emission tomography-computed tomography (PET-CT) scan showed minimal fluoro-deoxyglucose uptake in the mass lesion, liver and spleen. The clinical findings were linked to hypersplenism; therefore, total splenectomy and revision of the initial biopsy were planned. The paraffin block consultation of the initial biopsy was provided.

Histopathological Findings

Microscopic examination of the mass lesion showed diffuse infiltration of hematopoietic cells composed of maturing myeloid cells, clusters of erythroid precursors and scattered megakaryocytes (Figure 2). Immunohistochemical staining confirmed the myeloperoxidase (MPO) expressing myeloid elements and glycophorin-expressing erythroid elements of the infiltrate (Figure 2). CD34 staining highlighted the background vasculature and there was no evidence of increased numbers of CD34-positive blasts. CD61 confirmed the existence of scattered megakaryocytes (Figure 2). In our repetition of immunohistochemistry, CD15 antibody stained some granulocytic lineage cells, without any Reed-Sternberg cells detected. Based on these findings the new diagnosis, in the light of the foregoing findings, was mass-forming extramedullary hematopoiesis. Subsequent splenectomy specimen exhibited histological findings of congestion, focal ischemic necrosis and old hemorrhage. There was no EMH in the spleen analysed.

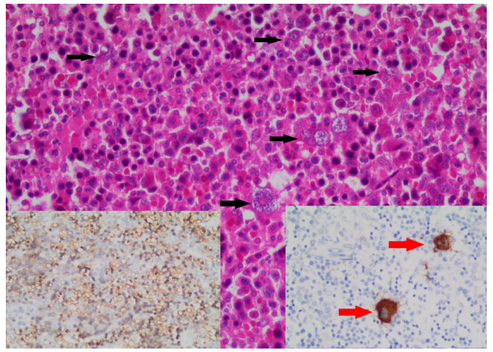

Figure 2. Mainframe: histologic section of the mass lesion (black arrows: scattered megakaryocytes, ×400). Left lower frame: glycophorin immunohistochemistry (×400). Right lower frame: CD61 immunohistochemistry (red arrows: scattered megakaryocytes, ×400).

Discussion

Extramedullary hematopoiesis occurs in several situations, such as embryonic development, insufficient bone marrow function, ineffective hematopoiesis, hypoxia, hematological disorders, and stromal disorders of the bone. EMH is characterized by hematopoietic cell proliferation in organs such as the spleen, liver, lymph nodes and paravertebral regions [1]. Rare locations previously reported are the posterior mediastinum [2], pleura [3], pericardium [4], adrenal gland [5], prostate [6] and even a pilomatricoma [7]. EMH is usually asymptomatic and develops slowly over time, but spinal cord compression [8] and spontaneous rupture [9] have been described. The most common symptom is local vertebral pain that may be accompanied by radicular pain and paresthesia. Diagnosis of a mass-forming intrathoracic EMH can be suspected after a chest X-Ray, CT, or magnetic resonance imaging (MRI) [10]. Thoracic paraspinal masses of EMH are typically bilateral, smooth-surfaced, soft-tissue masses that contain areas of fat attenuation and do not calcify [11]. The presence of fat attenuation within the masses most likely represents non-active lesions (similar to yellow marrow), whereas enhancement is more likely to be present in actively hematopoietic masses (similar to red marrow) [12].

A posterior mediastinal mass lesion should always include a broad list of differential diagnosis including neurogenic and mesenchymal tumours, hematologic malignancies and infectious etiologies. Given the morphological findings of a mixture of hematopoietic elements; lymphomas and granulocytic sarcoma are the cardinal differentials in this case. Neither the symptoms nor the laboratory findings of the patient support a neoplastic situation. Furthermore, polyclonality of lymphoid cells is obvious and blastic cells are not present. The existence of hemolytic anemia should be reminiscent of dyshematopoiesis.

The source of confusion, in this case, was the non-specific CD15 staining in some of the megakaryocytes. CD15 (3-fucosyl-N-acetyl-lactosamine) is a cluster of differentiation antigen, also a carbohydrate adhesion molecule that can be expressed on glycoproteins, glycolipids and proteoglycans of granulocytic cells [13]. Several studies [14-16]. have shown that CD15 immunoreactivity is found in a wide range of normal tissues and non-lymphoid neoplasms. This may reflect cross-reactivity with related epitopes or expression of the same epitope in a variety of tissues [17]. Although, having distinct cytological features like multilobate-vesicular nucleus, megakaryocytes may lead to the impression of Reed-Sternberg like large atypical cells, especially in a background of a mixed hematopoietic population. Clusters of erythroid precursors can be awakening, despite their lymphocyte-like appearance.

Extramedullary hematopoiesis is a non-neoplastic entity, often presenting as a mass lesion. Clinical history-especially a background of a hematologic disorder background, physical examination and radiologic findings should be included in the assessment. A multidisciplinary approach is key in this type of cases, preventing a misdiagnosis.

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