Extramedullary hematopoiesis in leiomyoma uteri

Myoma uteri içerisinde ekstramedullar hematopoiezis

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Abstract

Extramedullary hematopoiesis (EMH) that often occurs as a compensatory reaction to an underlying hematologic abnormality is a non-neoplastic proliferation of hematopoietic tissue outside the bone marrow and peripheral blood. Rarely, EMH may be seen in hematologically normal individuals. EMH is most commonly (95%) seen in reticuloendothelial organs such as the spleen, liver, and lymph nodes but has rarely been reported in other locations. EMH is extremely rare in the uterus. In this case report, we present EMH in leiomyoma uteri in patients without any underlying hematologic abnormalities. Very rare clinical conditions like EMH can be observed in cases of myoma uteri and therefore should be kept in mind. There is currently no consensus regarding the pathogenesis and clinical management of this uncommon pathology and further reports on this topic are needed.

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Key words: Extramedullary hematopoiesis, leiomyoma uteri

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Özet

Kemik iliği ve periferik kan dışında hematopoietik dokuların neoplastik olmayan proliferasyonu olarak tanımlanan ekstramedullar hematopoiezis (EMH) nadir olarak sağlıklı kişlerde görülür. Yine EMH çok nadir olarak uterusta görülebilir. Bu sunumda hematolojik olarak normal izlenen bir olguda myoma uteri içerisinde saptanan EMH durumu tartışılmıştır. Dejenere 8x10 cm büyüklüğünde intramural-subseröz myoma uteri saptanan 43 yaşındaki hastaya histerektomi operasyonu uygulanmıştır. Patoloji örneğinin histolojik incelemesi sonucunda mitotik aktif leiomyoma uteri ile birlikte EMH saptanmıştır. Takiben yapılan sistemik araştırmada, periferik yayma ve kemik iliği biopsisini de içeren detaylı laboratuvar bulguları normal olarak izlenmiştir. EMH gibi nadir klinik durumlar myoma uteri içerisinde izlenebilir. Günümüzde bu nadir durumun patogenezi ve klinik yaklaşımı konusunda fikir birliği yoktur. Bu konuda yeni yayınlara ihtiyaç vardır.

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Anahtar kelimeler: Ekstramedullar hematopoiezis, myoma uteri

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Introduction

Extramedullary hematopoiesis (EMH) is a non-neoplastic proliferation of hematopoietic tissue outside the bone marrow and peripheral blood (1). EMH often occurs as a compensatory reaction to an underlying hematologic abnormality (2). Rarely, EMH may be seen in hematologically normal individuals. EMH is most commonly (95%) seen in reticuloendothelial organs such as the spleen, liver, and lymph nodes but, rarely, has been reported in other locations, such as serous membranes and the uterus (3-7). In this case report, we present EMH in leiomyoma uteri in patients without any underlying hematologic abnormalities.

Case Report

A 43-year-old woman had undergone hysterectomy because of a degenerated intramural-subserosal uterine leiomyoma about 8X10 cm in size. Histological examination of the specimen revealed a mitotically active cellular leiomyoma with EMH (Figure 1, 2). Erythroid precursors were stained for glycophorin (Figure 3). There was no evidence of any hematological disease. The laboratory findings of the patient are reported in Table 1. An extensive hematologic and systemic evaluation was performed after the pathology report of EMH in myoma uteri. Bone marrow biopsy was performed and was evaluated as normal (Figure 4). Cellularity was observed as 70%, including three series of haematopoietic cells in bone marrow.

Cranial, neck, thoracic, upper and lover abdominal computed tomography scans showed no obvious pathology. Despite high levels of rheumatoid factor, rheumatological and physical examination revealed normal findings. Although the patient has an increased platelet count of lower than 450 x 10^3/ml, clinical management for thrombocytosis was not considered, because other hematological evaluations of the patient, including bone marrow biopsy and peripheral blood smear, were all normal.

Discussion

EMH is extremely rare in the uterus. In the English literature, Creagh et al. reported four cases of EMH in the endometrium

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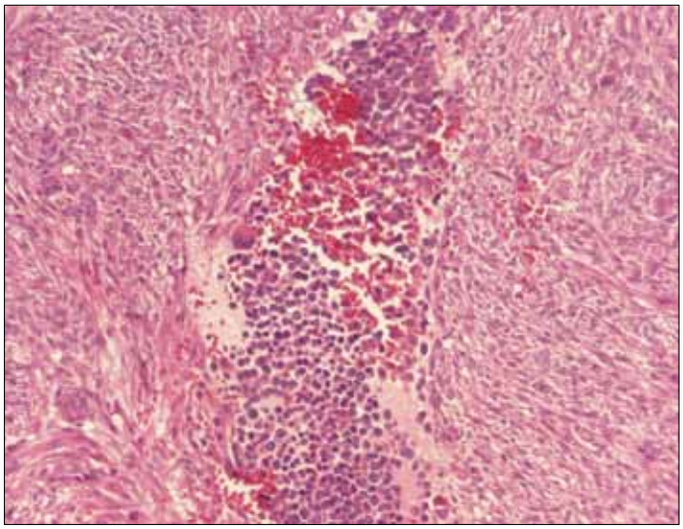

Figure 1. Extramedullary hematopoesis in leiomyoma. Hematopoietic cell groups are seen among spindle cells of leiomyoma (H.E. x 100)

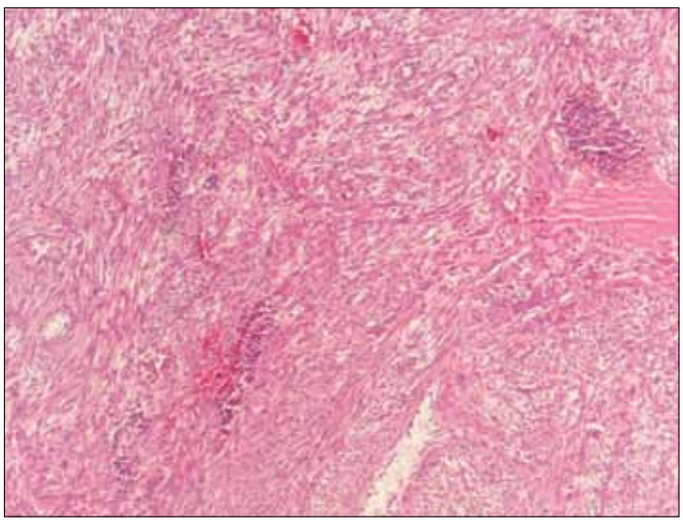

Figure 2. An extramedullary hematopoetic focus in cellular leiomyoma. This micrograph shows a megakaryocyte and the other hematopoietic cells among spindle mesenchymal cells (HE x 200)

associated with hematological disease, including myeloproliferative disorder, thalassaemia trait, chronic myeloid leukaemia and multiple myeloma (8), and other authors reported EMH in the endometrium or cervix with no underlying haematological abnormality (4-6).

Schmid et al. described EMH in leiomyoma of the uterus in patients with no hematological disorder (7). We observed EMH in leiomyoma in a hematologically normal individual, similar to Schmid et al.

Theories accounting for the occurrence of haemopoietic foci in extramedullary locations consider two mechanisms. One is the presence of a precursor uncommitted mesenchymal cell and the other is seeding of distant sites by circulating haemopoietic cells (8, 9). Supporting the former mechanism in leiomyoma uteri, Sun et al showed that blast colony-forming cells exhibiting bilineage (hematopoietic and vascular) potential and

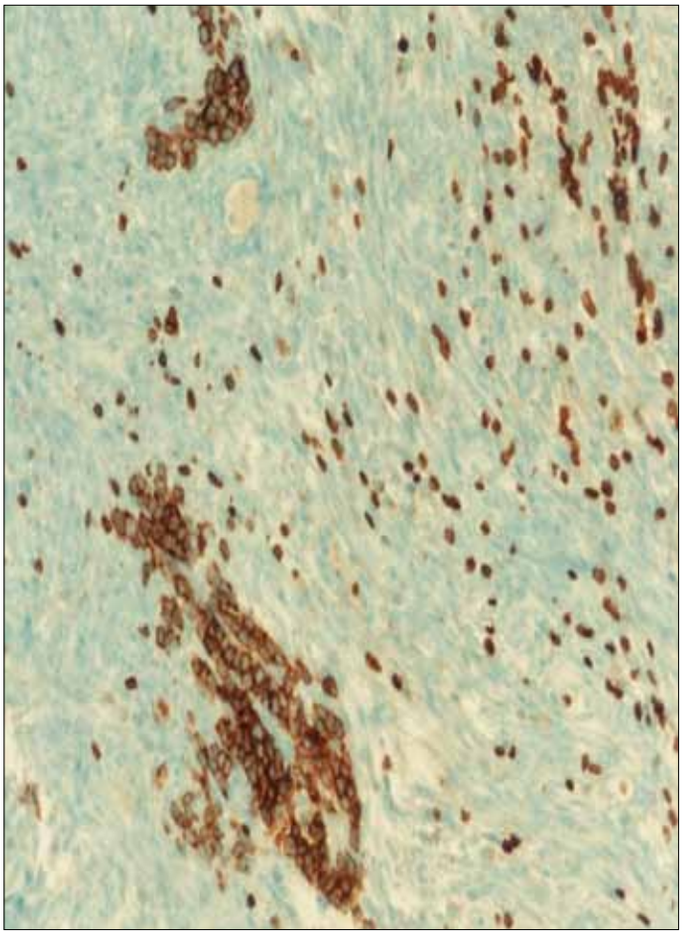

Figure 3. Extramedullary hematopoesis in leiomyoma. Erythroid precursors are stained for glycophorin (Glycophorin x 200)

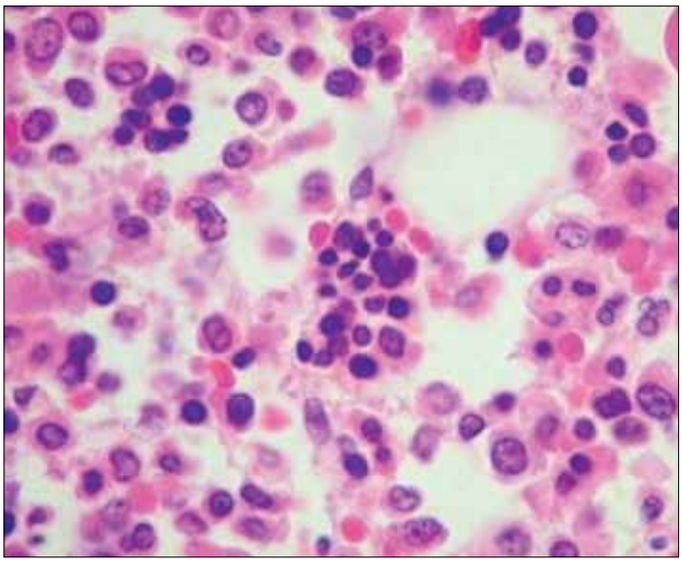

Figure 4. Normal bone marrow tissue

long-term self-renewal originate from the uterus in the mouse (10). Currently, Zhou et al. hypothesised that hypoxia might be a novel driving force for leiomyoma as an indirect inducer of differentiation of myometrial stem cells into leiomyoma cells,

Table 1. Clinical characteristics of the patient with extramedullary haematopoiesis in leiomyoma

	Results	Reference Values
Hemoglobin (g/dl)	13	12.3-15.4
Leukocytes ($10^3/\mu l$)	8.8	4.1-10.3
Thrombocytes ($10^3/\mu l$)	437	158.7-387.7
Glucose (mg/dl)	86	70-109
Creatinine (mg/dl)	0.067	0.57-1.11
Albumin (g/dl)	4.42	3.5-5.0
ALT (U/l)	23	3-55
LDH (U/l)	211	125-243
Total bilirubin (mg/dl)	0.57	0.2-1.2
Direct bilirubin (mg/dl)	0.25	0.0-0.5
Anti HCV	Negative	Negative
Anti HIV	Negative	Negative
Hbs Ag	Negative	Negative
Direct Coombs Anti Ig G	Negative	Negative
Anti C3d	Negative	Negative
CCP (Units/ml)	4.24	0-15
CRP (mg/l)	7.63	0-5
RF (IU/ml)	65	0-15
CMV PCR-2 (copy/ml)	<235	<235
Ig A (g/l)	2.25	0.7-4
Ig M (g/l)	2.64	0.4-2.3
Ig E (IU/ml)	59	0-100

ALT: alanine amino transferase, LDH: lactate dehydrogenase, HCV; Hepatitis C virus, HIV: Human immunodeficiency virus, HBsAg: hepatitis B surface antigen, CCP: cyclic citrullinated peptide, CRP: C-reactive protein, RF: rheumatoid factor, CMV: cytomegalovirus, PCR: polymerase chain reaction, Ig: immunoglobulin

which could be activated by aberrant activation of estrogen signaling pathways (11). In this case, hypoxia could be an insult stimulating differentiation of stem cells, which exist in the leiomyoma tissue, into hemapoietic cell.

In conclusion, very rare clinical conditions like EMH can be observed in cases of myoma uteri and therefore should be kept in mind. There is currently no consensus regarding the pathogenesis and clinical management of this uncommon pathology and further reports on this topic are needed.

Conflict of interest

No conflict of interest was declared by the authors.

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