Clinical Notes

Pure red cell aplasia associated with thymic follicular hyperplasia

Gonenc Kocabay, MD, Betul Tiryaki, MD,
Cicek Bayindir, MD, Naciye Demirel-Yildirim, MD.

Pure erythrocytic anemia (PEA), is a clinicopathologic diagnosis where only erythropoiesis is impaired, characterized with severe anemia and reticulocyte count less than 1%, with detection of erythroblasts at less than 0.5% in bone marrow. Although it is commonly acquired, thymoma is detected in 10-15% of patients.[1] Since concurrence of PEA with thymic lymphoid follicular hyperplasia is very rare, only 2 case reports have been found in English literature search.[1,2] In this report, we present a case who was assessed for PEA and found to have thymic follicular hyperplasia. A 27-year-old female patient, with no previous complaints was admitted to our outpatient clinic due to weakness. She did not have any particularity in her personal and family history. She did not have a history of drug or alcohol use. During her physical examination, no pathology has been observed except for conjunctival pallor. Her body temperature was 36.5°C, her blood pressure was 120/70 mmHg and pulse/min was 80 and rhythmic.

Laboratory assessments revealed an erythrocyte sedimentation rate of 60 mm/h. The blood panel showed hemoglobin 5.5 g/dl, hematocrit 16%, mean corpuscular volume (MCV) 85 flt, leukocytes 5500/µl, neutrophils 3200/µl, lymphocytes 1200/µl and platelets 36,0000/µl. Routine blood biochemistry analyses revealed glucose 70 mg/dl, blood urea nitrogen (BUN) 13 mg/dl, creatinine 0.6 mg/dl, sodium 138 mmol/lt, potassium 4 mmol/lt, lactate dehydrogenase (LDH) 260 U/L normal range [NR (NR:240-480)], iron 200 µg/dl (NR:50-175), total iron binding capacity 273 µg/dl (NR:250-410) and ferritin 580 ng/ml (NR:13-150). Serum vitamin B12 and folic acid levels were normal. Peripheral smear did not show any pathology. Corrected reticulocyte count was 0.07%. Coagulation tests, serum protein electrophoresis and haptoglobulin level were normal. Combs test was negative. Blood marrow aspiration showed normal megacaryocytic and granulocytic series precursors, with substantial regression in erythroid series and her biopsy showed regression in erythroid series, slightly hyperplasia in megacaryocytic and granulocytic series, with mild increase in reticulin fibers. Based on these findings, a diagnosis of PEA was made. Viral serology to investigate secondary causes (Parvovirus IgM antibody, Ebstein Barr Virus-Viral Capsid antigen, anti-citomegalovirus IgM antibody, anti-HIV antibody, anti-hepatitis C virus antibody, hepatitis

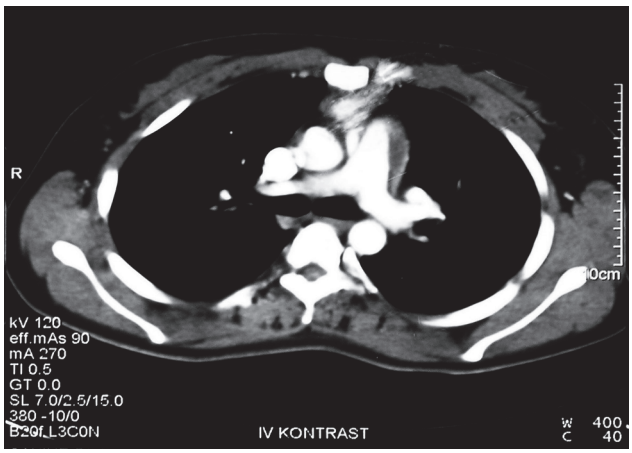

Figure 1 - Fusiform patterned thymus gland in adjacent to main pulmonary artery in anterior mediastine.

B surface antigen), also anti-nuclear antibodies and and anti-double-stranded-DNA were found negative. Although her lung radiography showed no pathology, computed thoracic tomography (CTT) was performed. Thoracic CT showed fusiform patterned thymus gland in adjacent to main pulmonary artery in the anterior mediastine (**Figure 1**). No pathology was observed in her computed abdominal tomography and symptomatic improvement has been achieved with erythrocyte suspensions. Arterial blood gas analysis and respiratory function test did not show any pathology and she underwent thymectomy, with right video thoracoscopic exploration and partial median sternotomy. Pathologic examination of the material (9 x 1.5 x 1.5 cm) resected from thymic lodge showed positivity in germinal centers against CD20 and generalized positive reaction to CD3 in regions except these sites. There are many germinal centers and thymus parenchyma with hematoxylin eosin strain. Diagnosis of follicular hyperplasia was carried out based on these findings. After surgical operation, she had a gradual increase in her hemoglobin value and at third month, her blood panel showed hemoglobin 12 g/dl, hematocrit 35%, leukocytes 9000/µl, neutrophils 7000/µl, lymphocytes 1000/µl and platelets 340000/µl. Pure erythrocytic anemia, is a clinicopathologic diagnosis where only erythropoiesis is impaired, characterized with severe anemia and reticulocyte count less than 1%, with detection of erythroblasts at less than 0.5% in bone marrow. No pathology is observed in other cell series in bone marrow and peripheral blood analysis. While it is acquired in most cases, 50% of patients exhibit viral infection, toxin, collagen tissue disorders and thymus pathology especially thymoma.[3] Although, thymic hyperplasia or thymoma is frequently detected during the course of myasthenia gravis, especially fusiform

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cell thymoma or medullary type thymoma accompany in 10-15% of patients with PEA.[1] Pure erythrocytic anemia occurrence is very rare in cases with enlarged thymus due to follicular hyperplasia and exist as case presentations in literature.[1,2] Association of lymphoid follicular thymic hyperplasia with PEA was first reported by Wong and colleagues in 1995.[1] Acquired causes were sought in patient who was diagnosed with PEA based on clinical and laboratory assessments. Her viral serology was not consistent with an acute infection. The patient never used alcohol or drugs. Serologic analysis for collagenosis was negative. Result of CTT showed fusiform patterned thymus gland in adjacent to main pulmonary artery in anterior mediastine and thoracotomy and thymectomy was performed. Biopsy was consistent with thymic follicular hyperplasia and within 3 months, her blood values showed a gradual increase. While PEA is commonly observed during the course of thymoma, thymic follicular hyperplasia was found in our case. Since thymus contains several different immunologic cells, PEA may be observed in non-thymoma thymic pathologies.[3] Levine and Rosai[4] reported that thymus hyperplasia have 2 different forms. Accordingly, in the first one while thymus is generally normal in volume, reactive hyperplasia is present at germinal centers. In the second form, which is seen less frequently, thymic structures are in normal order but tissue volume may be increased. This form is called a true thymic hyperplasia or massive thymic hyperplasia. While 2 cases of reactive hyperplasia accompanying PEA were found in English literature search,[1,2] only one case was found with true thymic hyperplasia.[3] Presence of a similar antigen in thymus and erythroblastic cells[5] may explain remission seen in PEA following thymectomy. In conclusion, PEA may also develop during the course of thymic pathologies other than thymoma. In such cases, hematologic improvement may be achieved by thymectomy.

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From the Department of Internal Medicine (Kocabay, Demirel-Yildirim), Department of Radiology (Tiryaki), and the Department of Pathology (Bayindir), Istanbul School of Medicine, Istanbul University, Istanbul, Turkey. Address correspondence and reprint requests to: Dr. Gonenc Kocabay, Department of Internal Medicine, Istanbul School of Medicine, Istanbul University, Ahmet Vefic Pasa Caddesi Yasam Apartmmani No. 60 Kat 2 Daire 2 Capa, Istanbul, Turkey. Tel. +90 (532) 5180035. Fax. +90 (212) 5305858. E-mail: goneckocabay@yahoo.com, kocabay@gmail.com

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