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Interstitial Lung Disease Secondary to Iron Deposition in the Lungs in a Patient with Hemosiderosis

Hemosiderosisli bir Hastada Akciğerde Demir Birikimine Bağlı İnterstisyel Akciğer Hastalığı

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Abstract

Hemosiderosis is the abnormal accumulation of iron in the parenchymal organs, leading to organ toxicity. It may be hereditary or caused secondary to diseases of erythropoiesis and the treatment of the diseases with blood transfusion. Herein, we present a case of thalassemia with blood transfusion, due to iron accumulation in the lungs. Interstitial lung disease secondary to this accumulation in a hemosiderosis case is extremely rare, and the study aimed to highlight the possibility of interstitial lung disease secondary to repeated blood transfusion by iron accumulation in the lungs.

Key words: *Iron accumulation, hemosiderosis, interstitial lung disease, blood transfusion.*

Özet

Hemosiderosis, parankimal organlarda demir birikimi sonucu organ toksisitesine yol açan bir hastalıktır. Bu, herediter olabileceği gibi sekonder eritropoezis ve kan transfüzyonu yapılan hastalıklar sonrası gelişebilir. Burada, talesemili bir olguda kan tansfüzyonu sonrası akciğerde demir birikimine sekonder interstisyel akciğer hastalığı gelişimi oldukça nadir olduğundan ve tekrarlayan transfüzyonlar sonrası akciğerde demir birikimine bağlı interstisyel akciğer hastalığı gelişebileceğini vurgulamak için bu olguyu sunduk.

Anahtar Sözcükler: *Demir birikimi, hemosiderosis, interstisyel akciğer hastalığı, kan transfüzyonu.*

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Hemosiderosis is the abnormal accumulation of iron in the parenchymal organs, leading to organ toxicity (1). It be hereditary (hemochromatosis) or caused secondary to diseases of erythropoiesis and treatment of the diseases with blood transfusions. Transfusional hemosiderosis is triggered by repeated blood transfusions. The organs involved are the liver, heart, pancreas, pituitary glands, joints and skin. Transfusion related iron overload in the lungs is rare. The current study aimed to present a case of hemosiderosis with interstitial lung disease secondary to abnormal accumulation of iron in the lungs, which is extremely rare.

CASE

A 29-year-old male patient presented with fatigue, loss of appetite, and dyspnea on effort. He had a history of repeated blood transfusions due to thalassemia. His physical examination revealed mucosal paleness, hepatomegaly, and splenomegaly, and inspiratory fine crackles on his chest auscultation. The laboratory examination showed anemia (Hb: 7.2 g/dl). The chest x-ray showed bilateral reticulonodular opacities, predominantly in the mid to lower zones. The high-resolution CT showed diffuse micro nodular pattern (Figure 1). The histopathological examination of the transbronchial biopsy specimen showed hemosiderin-laden macrophages and intrahistiocytic iron accumulation (Figure 2a, b). The patient was diagnosed with secondary hemosiderosis related to blood transfusion. Deferasirox therapy was prescribed to the patient. The patient was followed for four years and he was in stable condition during this period.

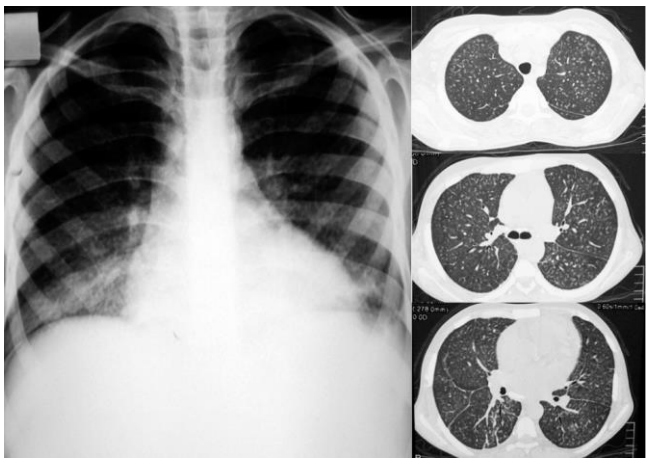

Figure 1: *Radiologic images of the patient*

DISCUSSION

This report highlights the possibility of interstitial lung disease secondary to repeated blood transfusions by iron accumulation in the lungs, which is extremely rare.

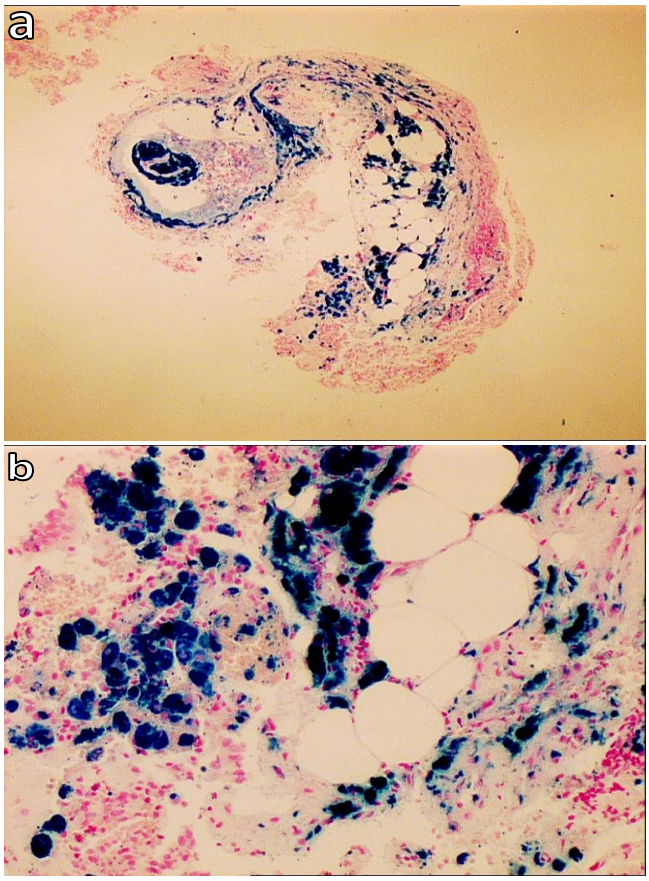

Figure 2a, b: *Histological findings of hemosiderosis of the lung*

Hemosiderosis is characterized by the deposition of excess iron within the body tissues that normally do not contain iron. It is usually secondary to a primary cause such as multiple blood transfusion, chronic hemodialysis, or hemolytic anemia (e.g. thalassemia). It also may occur as a result of a genetic defect, which called hemochromatosis. Hemosiderin initially accumulates in the reticuloendothelial system (spleen, bone marrow, and Kupffer cells in the liver). When the reticuloendothelial system becomes saturated, deposition occurs in normal body tissues such as the hepatocytes, heart muscles, and the endocrine system (1). The current case had secondary hemosiderosis due to multiple blood transfusions.

Transfusional hemosiderosis is triggered by repeated blood transfusions. Chronic transfusional support is a life-saving treatment in patients with thalassemia, sickle cell anemia, refractory aplastic anemia, myelodysplastic

syndrome, and various leukemic states (2). However, repeated transfusions of blood can rapidly cause an iron overload and some may develop clinical signs of iron overload (e.g., liver dysfunction, heart failure, skin pigmentation, diabetes mellitus, and other endocrinopathies) (3,4). Transfusion-related iron overload in the lungs is rare. Conventional radiographs typically show acinar and confluent airspace consolidation in the acute phase (5,6). However, a nodular or reticulonodular pattern has been described in chronic cases. CT shows uniform distribution of multiple small nodules measuring 3-4 mm in diameter in chronic cases (7). In the current case, CT findings were similar to chronic cases.

In conclusion, iron accumulation in the lungs and interstitial lung disease secondary to this accumulation in a hemosiderosis case is extremely rare. This case highlights the possibility of interstitial lung disease secondary to repeated blood transfusion by iron accumulation in the lungs.

CONFLICTS OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

Concept - E.Y.U., M.A., Ö.A., R.B.B., E.D., F.A.; Planning and Design - E.Y.U., M.A., Ö.A., R.B.B., E.D., F.A.; Supervision - E.Y.U., M.A., Ö.A., R.B.B., E.D., F.A.; Funding - E.Y.U., M.A., E.D.; Materials - E.Y.U., M.A., R.B.B., E.D.; Data Collection and/or Processing - M.A., R.B.B., Ö.A.; Analysis and/or Interpretation - E.Y.U., E.D.; Literature Review - E.Y.U., M.A.; Writing - E.Y.U., Ö.A.; Critical Review - M.A., E.Y.U., Ö.A., F.A.

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