Idiopathic pulmonary haemosiderosis

Ülkü Y. TURAY, Pınar ERGÜN, Yurdanur ERDOĞAN, Çiğdem BİBER, Funda DEMİRAĞ, İ. Atilla KEYF

Atatürk Göğüs Hastalıkları ve Göğüs Cerrahisi Eğitim ve Araştırma Hastanesi, Ankara.

ÖZET

İdiyopatik pulmoner hemosiderozis

Yirmi yedi yaşında kadın hasta dispne, şiddetli hemoptizi ve demir eksikliği anemisi ile başvurdu. Olgunun göğüs radyografisinde bilateral retikülonodüler infiltrasyonlar ve sağ kostodiyafragmatik sinüsü kapatan homojen infiltrasyon mevcuttu. Hasta tüm alveoler hemoraji sendromları yönünden araştırıldı ve açık akciğer biyopsisi ile idiyopatik pulmoner hemosiderozis tanısı koyuldu. İdiyopatik pulmoner hemosiderozis genellikle infantlarda veya birinci dekadda görülen bir tablodur ve etyolojisi bilinmemektedir. Erişkinlerde nadir olup 1-17 yaş arasında sıktır. Klinik prezentasyon; anemi, öksürük, dispneyi içeren sinsi bir başlangıçtan, tekrarlayan akut hemoptizi ile karakterize fulminan bir tabloya kadar değişebilmektedir. Hastalığın kesin tanısı için genellikle açık akciğer biyopsisi gerekmektedir.

Anahtar Kelimeler: *Pulmoner hemoraji, idiyopatik pulmoner hemosiderozis.*

SUMMARY

Idiopathic pulmonary haemosiderosis

Turay UY, Ergun P, Erdogan Y, Biber C, Demirag F, Keyf IA

Ataturk Chest Diseases and Chest Surgery Education and Research Hospital, Ankara, Turkey.

Twentyseven years old woman was admitted to our hospital with dyspnea, severe hemoptysis and iron deficiency anemia. The chest X-ray showed bilateral interstitial markings with homogenous infiltration at right costodiafragmatic sinus. The patient was investigated for all alveolar hemorrhagic syndromes. The diagnosis of idiopathic pulmonary haemosiderosis (IPH) was made by open lung biopsy. IPH usually presents in infancy or within the first decade of life and is unknown aetiology. It is most common between ages 1-17 and exceedingly rare in adults. Clinical presentation of IPH varies from an insidious onset with anemia, cough, dyspnea to a fulminant onset with recurrent acute hemoptysis. Histological confirmation with open lung biopsy is often necessary for definite diagnosis.

Key Words: *Pulmonary hemorrhage, idiopathic pulmonary haemosiderosis.*

Idiopathic pulmonary haemosiderosis (IPH) is a disorder of unclear pathogenesis, occurring in the first decade of life in the majority of patients (1,2). The disease is characterised by a triad of recurrent episodes of hemoptysis, iron deficiency anemia and diffuse pulmonary infiltrates (1-5). The diagnosis is based on history, presence of anemia, characteristic chest X-ray and was

Yazışma Adresi (Address for Correspondence):

Dr. Ülkü Y. TURAY, Atatürk Göğüs Hastalıkları ve Göğüs Cerrahisi Eğitim ve Araştırma Hastanesi, ANKARA - TURKEY
e-mail: ulkuturay@hotmail.com

confirmed by showing haemosiderin laden macrophages in gastric washing or bronchoalveolar lavage and/or open lung biopsy (3).

This rare disease is characterised morphologically by focal intraalveolar hemorrhage and thickening of the alveolar basement membrane with interstitial fibrosis (3).

We present a case of IPH at the age of 27 as it is exceedingly rare in adults.

CASE REPORT

A 27 years old woman was admitted to our hospital with a history progressive dyspnea and hemoptysis. Two mounts ago she was admitted to another center with recurrent hemoptysis and diagnosed as pulmonary tuberculosis clinically and radiologically. She was given anti-tuberculosis therapy as HRZE protocol for 1.5 mounts and then referred to our hospital for further evaluation and treatment, when for sample of sputum tested for acid-fast bacilli was found negative both by direct microscopy and by culture. The patient had no symptoms of any type till the last 2 years and she gave no family history of tuberculosis. She was admitted to our hospital for identifying the aetiology of hemoptysis. Physical examination on admission revealed the temperature as 37°C, bood pressure 110/70 mm Hg, pulse 100/min, respiratory frequency 28 per minute, weight 61 kg and height 174 cm. On the auscultation fine end inspiratory crackles were heard over the area below the level of scapula on right hemithorax. Diffuse varicose veins were detected in the right lower extremity. Other systems' physical examination were found in normal limits. The results of routine laboratory tests were as follows; Hb 8 mg/dL, Htc 26.5%, serum iron 56 mg/dL, total iron binding capasity 420 mg/dL, erythrocyte sedimentation rate 52 mm/hr. Serum urea nitrogen, creatinin (15.5 and 0.8 mg/dL respectively) and urine analysis results were in normal limits. Chest X-ray revealed bilateral reticulonodular infiltration with homogenous infiltration at right costodiafragmatic sinus (Figure 1). High resolution computed tomography (HRCT) revealed reticulonodular, nodular and increased densities in both lungs suggesting alveolar pathology (Figure 2). The patient was evaluated for the intra alveolar hemorrhage syndromes. Among the test done for this purpose, serum Ig G, A, M antibodies, and C_3- C_4 levels were found as normal, c-ANCA, p-ANCA as negative. ANA, anti ds DNA and antiglomerular basal memrane antibody were found negative. Pulmonary function tests showed a forced vital capasity (FVC) 73% and forced expiratory volume first second (FEV_1) 73% of the predictive values respectively.

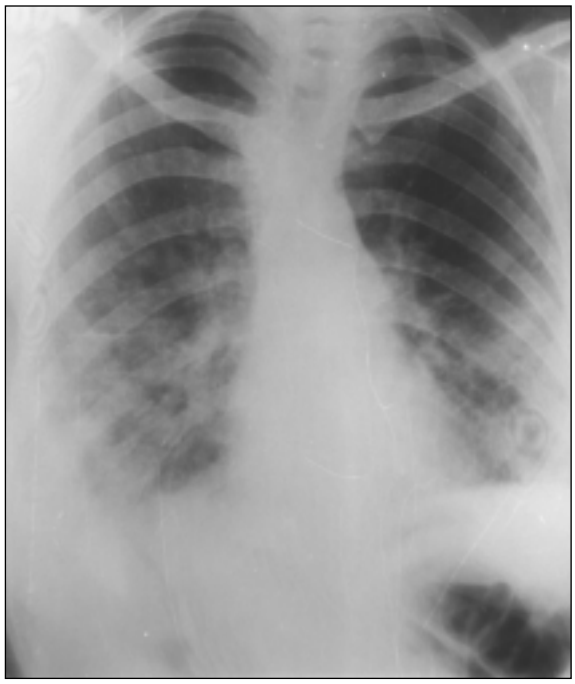

Figure 1. Chest X-ray on admission.

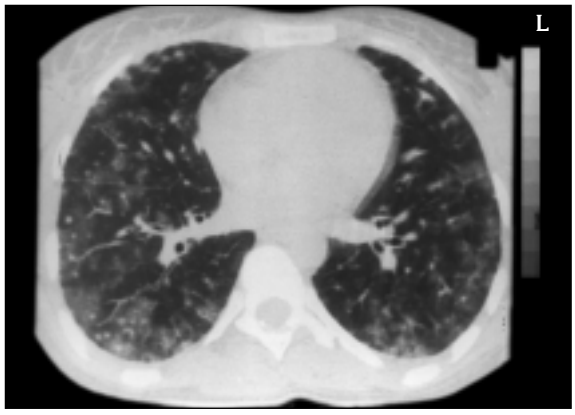

Figure 2. The high resolution computed tomography (HRCT) on admission.

An echocardiogram of the patient demostrated normal functioning. Pulmonary digital subtracti-

on angiography (DSA) was performed and showed normal pattern. Fiberoptic bronchoscopy demostrated bleeding from both main bronchus. Bronchial lavage and transbronchial biopsy specimens revealed no evidence of acit-fast organism, fungi or malignancy, although haemosiderin laden macrophages were detected. An open lung biopsy was performed consequently and histologic examination of biopsy specimen revealed haemosiderin laden intraalveolar macrophages distending individual alveoli and interstitium (Figure 3). No evidence of organising alveolitis, interstitial granulomatous pneumonitis or vasculitis were seen on light microscopy. The patient was diagnosed as having IPH and was started on regimen of high dose corticosteroids (CS) that was tapered to 5 mg/day. She did well except for occasional episodes of dry cough and shortness of breath during one year follow-up.

DISCUSSION

IPH is an unknown disorder that effects predominantly pediatric patients. The remaining 20% of cases are adult onset (1-6). Sex distribution appears to be balanced in child-onset IPH, and slightly skewed towards a male predominance in adult onset IPH (1). The clinical manifestation of IPH typically include hemoptysis, fleeting pulmonary infiltrates and iron deficiency anemia (7-9). The condition occurs either in the absence of other disorders associated with inrapulmonary haemorrhage or with extrapulmonary disease (9).

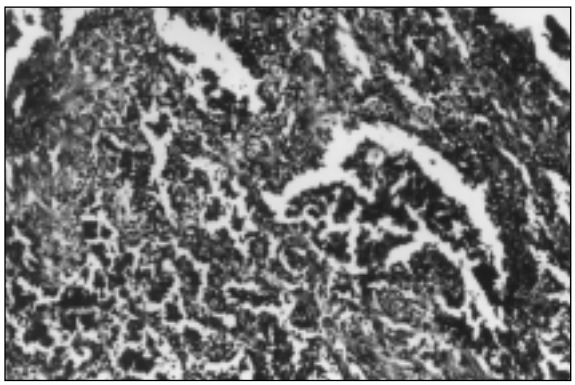

Figure 3. Lung biopsy showing patchy infiltrates corresponding to hemorrhage and exudation into air spaces. Alveoli contained hemosiderin filled macrophages.

All these characteristic were demostrated by our patients during her course. She had no symptoms of any type up to last 2 years. While several risk factors may be involved in IPH, its pathogenesis remains speculative at present. There are a few aetiologic hypotheses including genetic, autoimmune, allergic, environmental and metabolic theory (1,7-10). Differential diagnosis is important especially in adults and in cases without severe iron-deficiency anemia (2). Diffuse alveolar haemorrhage resulting from antibasement membrane antibody disease is usually associated with glomerulonephritis (8). Renal function was normal in our case and serum antiglomerular antibodies were negative. She also had no evidence of systemic vasculitis, collagenous vascular disorders, infections, cancer, pulmonary embolism or other conditions associated with diffuse alveolar hemorrhage (2,11). Our patient's clinical course and open lung biopsy specimens (haemosiderin laden macrophages in the alveolar spaces and interstitium) are therefore most consistent with the diagnosis of IPH.

A number of therapeutical trials have been tried, including splenectomy without significant results and systemic glucocorticoids (1). The variable course and rarity of the disease make assessment of treatment difficult. CS is thought to be useful in the management of the acute alveolar hemorrhagic state though the long-term efficacy of CS is still debatable. CS is unclear effect on chronic phase. The recommended starting dose is 1 mg/kg/day prednisolone for two mounts, untill the new alveolar infiltrates tend to resolve (1,6,9). Inhaled CS also have been tried, but insufficient experience exists to date (1). Other immune modulators have also been used with variable success, including hydrochloroquine, azathioprine and cyclophosphamide (3,12). Among them, azathioprine in combination CS might be the best therapeutic regimen, especially in preventing IPH exacerbation (1).

In our patient favourable response to CS therapy was observed during 1 year follow-up.

Although rare, the case suggests that IPH should be taken in to consideration in adults in the pre-

sence of the clinical triad of hemoptysis, pulmonary infiltrates and anemia when renal disease and other disorders that might be associated with diffuse pulmonary hemorrhageare excluded.

REFERENCES

1. *Ioachimescu OC, Sieber S, Kotch A. Idiopathic pulmonary haemosiderosis revisited. Eur Respir J 2004; 24: 162-70.*
2. *Akyar S, Ozbek SS. Computed tomography findings in idiopathic pulmonary hemosiderosis. Respiration 1993; 60: 63-4.*
3. *Saeed MM, Woo SM, Mac Laughlin EF, et al. Prognosis in pediatric idiopathic pulmonary hemosiderosis. Chest 1999; 116: 721-5.*
4. *Frankel LR, Smith DW, Pearl RG, Leviston NJ. Nitroglycerine responsive pulmonary hypertension in idiopathic pulmonary hemosiderosis. Am Rev Respir Dis 1986; 133: 170-2.*
5. *Ramirez T, Prados C, Gomez de Terroros Caro J, et al. Idiopathic pulmonary hemosiderosis in a patient of advanced age. Ach Bronchopneumol 1999; 35: 507-9.*
6. *Michaeli J, Kornberg A, Menashe M, et al. Exacerbation of idiopathic pulmonary hemosiderosis in pregnancy. Eur J Obstet Reprod Biol 1987; 24: 153-8.*
7. *Louie S, Russell LA, Richeson RB, Cross CE. Circulating immune complexes with pulmonary haemorrhage during pregnancy in idiopathic pulmonary haemosiderosis. Chest 1993; 104: 1907-9.*
8. *Sargel KH, Sommers SC. Idiopathic pulmonary haemosiderosis and related syndromes. Am J Med 1962; 32: 499-511.*
9. *Leatherman JW. Immune alveolar hemorrhage. Chest 1987; 91: 891-7.*
10. *Albelda SM, Gefter WB, Ebstein DM, Miller WT. Diffuse pulmonary hemorrhage: a review and classification. Radiology 1985; 154: 289-97.*
11. *Leatherman JW, Davies SF, Hoidal JR. Alveolar hemorhage syndromes: microvascular lung hemorrhage in immune and idiopathic disorders. Medicine 1984; 63: 343-61.*
12. *Airaghi L, Ciceri L, Giannini S, et al. Idiopathic pulmonary hemosiderosis in adult. Favourable response to azathioprine. Monaldi Arch Chest Dis 2001; 56: 211-3.*