IDIOPATHIC PULMONARY HAEMOSIDEROSIS OCCURRING IN A MALAYSIAN PATIENT

M R Hanip, M R Isa, B M Z Zainudin

ABSTRACT

A young East Malaysian lady presented with haemoptysis in 1989. Since then she had recurrent episodes of dyspnoea and two occasions of respiratory failure requiring assisted ventilation. An open lung biopsy showed intra-alveolar haemorrhage with diffuse interstitial fibrosis consistent with idiopathic pulmonary haemosiderosis after excluding secondary causes of pulmonary haemorrhage. She failed to respond to corticosteroid and continued to depend on oxygen until she succumbed to the illness 2 years after the presentation.

Keywords: *Idiopathic pulmonary haemosiderosis, respiratory failure, corticosteroids*

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INTRODUCTION

Idiopathic pulmonary haemosiderosis (IPH) is an uncommon syndrome which occurs mainly in children. It is characterised by the triad of haemoptysis, diffuse parenchymal infiltrates on chest radiograph, and iron-deficiency anaemia[1]. The condition occurs in the absence of disorders associated with intrapulmonary or extrapulmonary bleeding diseases[2].

IPH has been reported infrequently in literature. Between 1931-1960 only one hundred and eight cases were described in the literature[1]. Most of the cases occurred among non Asian patients. To our knowledge, no case of IPH has been reported in Malaysia before. We report here a case of IPH in a young lady from East Malaysia.

CASE REPORT

DG, a 16-year-old lady from a village in East Malaysia, presented to a local hospital with cough and haemoptysis in September 1989. She was treated for atypical pneumonia with a course of antibiotic but defaulted follow up. She was readmitted in January 1990 for recurrent cough, fever, dyspnoea and left-sided pleuritic pain. Pulmonary tuberculosis was suspected and anti-tuberculous treatment consisting of streptomycin, isoniazid, rifampicin and pyrazinamide was started despite negative results for tuberculosis. She however defaulted treatment after 2 months of therapy.

In April 1990, she was readmitted in respiratory failure following chicken-pox. She required 6 days of assisted ventilation and subsequently recovered reasonably well and was discharged. Since then she progressively became more breathless and was again admitted to a local hospital in January 1991 for severe dyspnoea associated with persistent hypoxia which required continuous oxygen supplement. She was treated with prednisolone 30mg daily for 2 weeks and at the same time the anti-tuberculous chemotherapy was recommended despite no microbiological or histological confirmation. After about two months with no progress, she was air-lifted to our hospital for further investigation and management. There was no similar history in the family and she had been apparently well in the past. On examination, she was centrally cyanosed, clubbed, tachypnoeic and appeared very much underweight. There was no ankle oedema and her jugular venous pressure was 5cm above the sternal angle. The pulmonary valve closure and left parasternal heave were felt. Auscultation of the lungs revealed diffuse fine inspiratory crackles. Other examinations were essentially normal.

Although on 45% of oxygen supplement her arterial blood gases showed PaO_2 of 58mmHg and $PaCO_2$ of 50mmHg. She deteriorated rapidly and required assisted ventilation 2 hours after admission. She was subsequently managed in the intensive care unit. Her chest radiograph showed generalised fine nodular opacities in both lungs with areas of confluent opacities on the left mid and lower zones (Fig 1). A diagnosis of interstitial lung disease was considered but pulmonary tuberculosis was regarded as the next likely diagnosis. Her antituberculous drugs were continued and prednisolone 30mg daily recommenced. Meanwhile a bronchoscopy was done showing mucosal inflammation in all her bronchi. Bronchial brushing and lavage were performed and the specimens were stained for acid fast bacilli and sent for cytology. Some degenerated lymphocytes, neutrophils and erythrocytes were noted and acid fast bacilli were negative. Her haemoglobin was 10.6 g/dl with features of normochromic normocytic anaemia, total white count was 10.3 x 10^9/l (90% neutrophils, 9% lymphocytes and 1% atypical lymphocytes) and platelets 280x10^9/l. The erythrocyte sedimentation rate was 43mm in the first hour, anti-nuclear antibody and rheumatoid factor were negative. Her coagulation screens were normal and echocardiography showed changes of pulmonary hypertension with no valvular or septal defect. She was subsequently referred to a cardiothoracic surgeon for thoracotomy and open lung biopsy. The lungs were described as "stiff and hyperaemic" with viscero-parietal pleural adhesions. Histopathological examination showed

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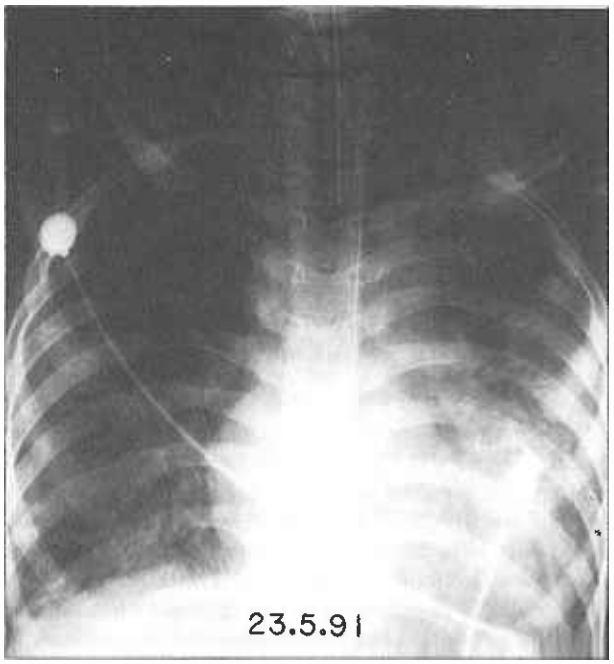
Fig 1 – Chest radiograph of the patient showing bilateral generalised nodular opacities with confluent shadow on the left mid and lower zones.



diffuse fibrosis that was mainly interstitial and focally intra-alveolar. There was extensive intra-alveolar haemorrhage within dilated alveolar spaces. There was also abundant haemosiderin deposition both in macrophages and extracellularly. Several small blood vessels showed encrustation of their walls by iron and calcium salts. Intimal thickening of blood vessels consistent with pulmonary hypertensive changes were also seen (Fig 2 and 3). There

Fig 2 – Intra-alveolar haemorrhage with diffuse interstitial fibrosis. A blood vessel showed calcification within its wall. H & E x 100.

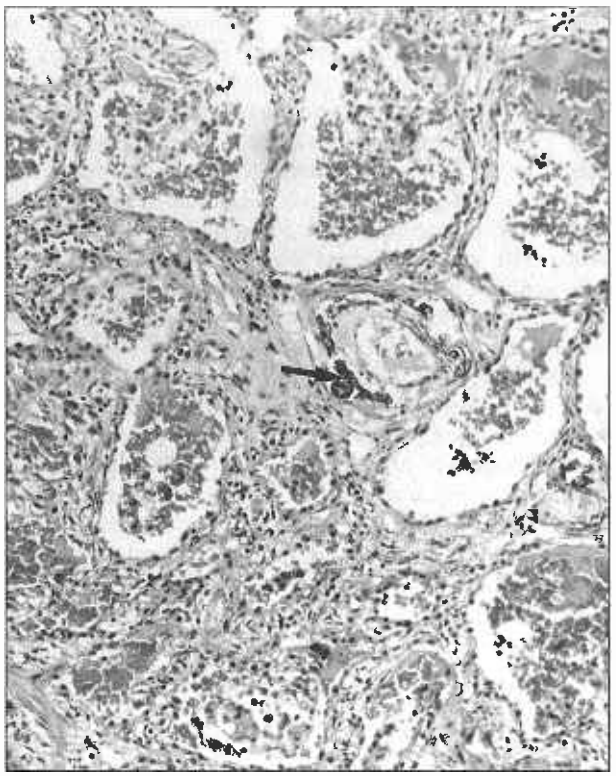
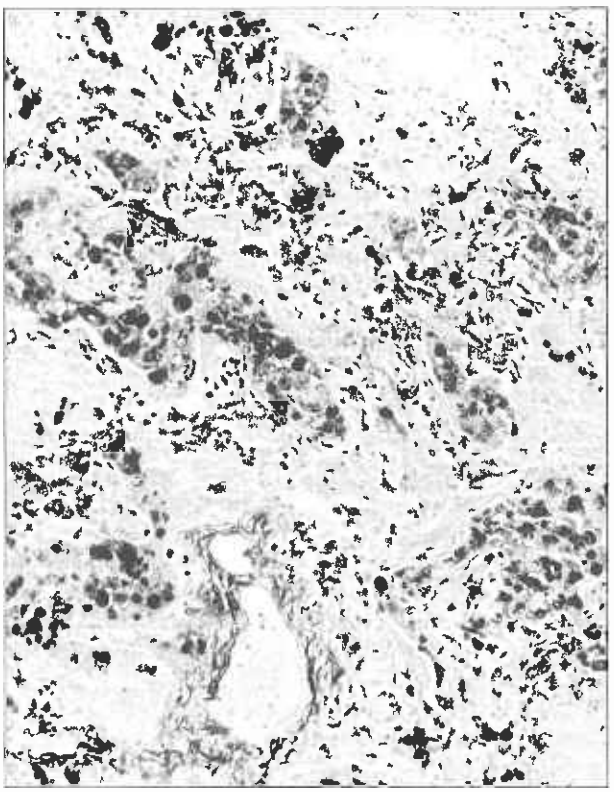


Fig 3 – Deposits of haemosiderin within alveoli and walls of blood vessels Perls' x 100.



was no evidence of granuloma, vasculitis or obliteration of pulmonary venules. Immunofluorescence examination of lung tissue was not performed. The clinical and histological findings of lung tissue were consistent with those of idiopathic pulmonary haemosiderosis.

Her anti-tuberculous drugs were ceased but the prednisolone was continued at 30mg daily. After one month in intensive care unit she was successfully extubated and maintained on continuous oxygen via high flow mask at 10-12 L/min. The arterial blood gases showed PaO_2 between 66-84mmHg, $PaCO_2$ between 30-42mmHg and O_2 saturation of 90-98%. Her prednisolone was gradually tapered off as no improvement of her lung condition was observed both clinically and radiologically after a month of treatment at 30mg daily. She was subsequently transferred back to her local hospital in July 1991 while waiting for the possibility of heart-lung transplantation abroad. Unfortunately she died 3 months later, about 2 years after her first presentation, due to respiratory failure and cor pulmonale.

DISCUSSION

Idiopathic pulmonary haemosiderosis (IPH) has a great variability of clinical course. Patient may die with acute symptoms, remain indolent with only slight exertional dyspnoea, or end up in cor pulmonale and secondary polycythaemia after fluctuating symptoms for many years. Approximately 50% of them die within one to five years, usually from progressive pulmonary fibrosis, pulmonary insufficiency, heart failure or massive haemoptysis [3]. This unfortunate lady had recurrent respiratory symptoms for 2 years until the terminal event. Her main presentation was intermittent dyspnoea initially but she subsequently progressed to irreversible respiratory failure. She had no significant prior or associated illness and the family history was non-contributory.

Since tuberculosis is endemic in our country, especially in East Malaysia, it is quite natural to make a provisional diagnosis of pulmonary tuberculosis in this patient when she presented with cough, haemoptysis and diffuse pulmonary infiltrate. However, it proved not to be the case and the diagnosis of IPH was finally made from histopathology of open lung biopsy and after excluding secondary causes of pulmonary haemosiderosis and systemic bleeding disorders. The disease may be truly rare in South East Asia but it may on the other hand be underdiagnosed as most cases may have been wrongly diagnosed as pulmonary tuberculosis.

The aetiology of the disease is not understood but most reported cases come from farming community[4]. This leads to the hypothesis of environmental factors especially insecticide as a contributing factor of the illness in genetically predisposed persons with poor socio-economic conditions. Cow's milk sensitivity has also been suggested as a cause when six out of seven children with the disease improved when milk from the diet was removed and reappeared on rechallenges as reported by Heiner et al[5]. This lady came from a farming family living in a remote village in East Malaysia. Environment does not seem to be the cause as no one else living in the village is affected. Her socio-economic condition is admittedly poor and may be a contributing factor.

Treatment of IPH is largely symptomatic in the form of oxygen and steroid. The chronic sideropaenic anaemia due to continuous, slow pulmonary bleeding usually responds well to oral iron therapy. Steroid has been used for the reason that IPH is an immunologic disorder. Some physicians advocate either corticosteroids or ACTH, whereas others use these drugs as a "last ditch measure". The types of steroid, dosage, duration and indication for this therapy vary quite widely. This lady however failed to respond to steroid. Soergel et al in their review of 112 cases concluded that the short-term use during bleeding episodes speeds up recovery and perhaps improves the immediate prognosis, but long term steroid therapy does not alter the course or progression of the disease[1]. Since pulmonary hypertension is one of the major determinants in the outcome of IPH, various pulmonary vasodilators have been used to alleviate this factor. Frankel et al showed a reduction of the pulmonary pressure with nitroglycerine infusion [6]. However, this effect was not sustained and the long term benefit is not proven.

For this lady who had established pulmonary fibrosis with pulmonary hypertension and cor pulmonale due to IPH where corticosteroid had failed, heart-lung transplantation remains the only hope for survival. Unfortunately, the surgery is not available in our country at the moment and treatment abroad has its own problems in term of the long waiting list, the logistic for transferring her to a centre abroad and the overall cost involved.

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