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Case report - Pulmonary

Haemo-pneumothorax and haemoptysis in a patient with suspected Ehlers–Danlos syndrome

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Abstract

We present a case of recurrent haemo-pneumothorax in a young female patient with previously undiagnosed Ehlers–Danlos syndrome (EDS). The patient presented with a spontaneous haemo-pneumothorax not associated with menstruation. Following further subsequent episodes, left lower lobectomy was performed. In the past, the patient had suffered recurrent atraumatic bilateral patella dislocations which were never fully investigated. Histology of the lung tissue revealed features suggestive of EDS. Haemothorax is a rare complication of type IV EDS. There are very few reported cases of pulmonary presentation of EDS type IV.

Keywords: Ehlers–Danlos syndrome; Haemoptysis; Haemothorax; Lobectomy

1. Introduction

Ehlers–Danlos syndrome (EDS) forms part of a spectrum of inherited connective tissue disorders that includes osteogenesis imperfecta and has an incidence of ~1 in 5000. It is an inherited disorder of collagen synthesis, and is characterised by hyperlaxity of joints. There is also a tendency to bruising and bleeding which is a feature of the vascular type IV EDS.

2. Case report

A 22-year-old female presented to her local emergency department after waking up that morning covered in blood. She was otherwise fit and well except for recurrent bilateral patella dislocations and a spontaneous left-sided pneumothorax that was treated two years previously with needle aspiration. A referral for assessment of a possible underlying connective tissue disorder was made but the patient was lost to follow-up.

A chest X-ray revealed a left-sided pneumothorax with effusion. An intercostal drain was inserted which drained 1.4 l of blood over the next 24 h, and a haemoglobin drop from 12.8 g/dl to 10 g/dl was noted.

A CT-scan showed a large left-sided pneumothorax with a significant collection, and then the patient was transferred to the regional thoracic surgical unit.

On arrival, the patient was unstable and taken to theatre for a bronchoscopy and left thoracoscopy. At bronchoscopy, blood was emanating from the left lower lobe bronchus to the level of the vocal cords with the left upper lobe and the right lung appearing normal. Left thoracoscopy revealed a large haemothorax and this was converted to a left thoracotomy. Findings at thoracotomy revealed a collapsed left lower lobe and haematoma within the pleural cavity. In an effort to preserve lung tissue and to obtain a diagnosis, a limited segmental resection was performed of the diseased lung tissue with a view of performing a left lower lobectomy should there be any further bleeding. Initial histology revealed intra-alveolar and intra-pulmonary haemorrhage with no features of malignancy, granulomas or a vasculitis.

Following an uneventful postoperative recovery the patient was discharged home. Over the subsequent months, the patient had further episodes of spontaneous haemoptysis unrelated to menstruation. These episodes were smaller, and non-life threatening. A repeat CT-scan showed a cystic lesion within the left lower lobe (Fig. 1). A flexible bronchoscopy was performed at this stage; no intrabronchial lesion or intrabronchial bleeding was seen. A redo left thoracotomy and lower lobectomy was performed (10 months after the initial thoracotomy).

Histology was atypical and a second opinion was sought. Macroscopically, the lung tissue had tears within the parenchyma with focal haemorrhaging within these tears (Fig. 2). Histologically the section revealed patchy filling of the alveolar spaces with cellular fibrous proliferation characteristic of organising pneumonia pattern, and there was also areas of focal osseous metaplasia. On the visceral pleural surface, there was increased fibrosis with a florid increase in vascularity. There was no associated interstitial chronic inflammation. The findings were similar to those seen in other cases of pulmonary manifestations of EDS type IV.

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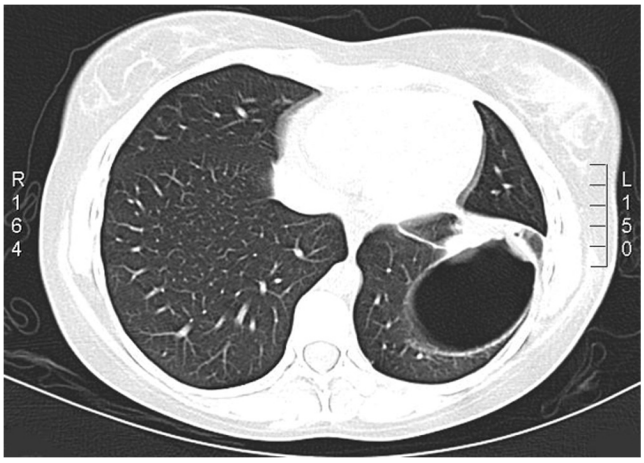

Fig. 1. A CT-scan showing a cystic lesion within the left lower lobe.

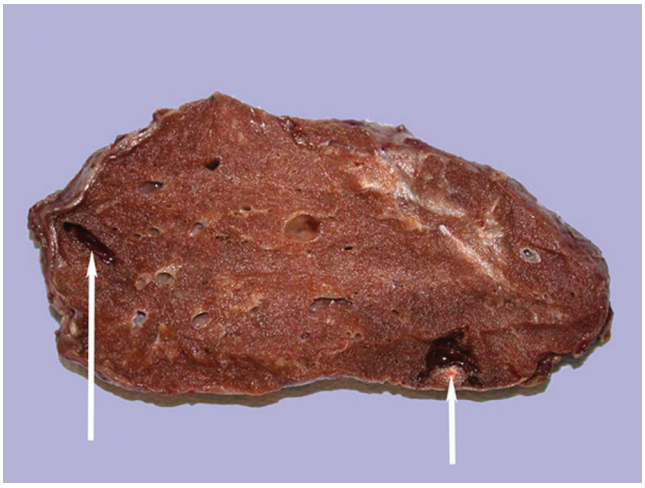

Fig. 2. A macroscopic section of the left lower lobe. White arrows point to parenchymal tears with signs of haemorrhage within these tears.

At six weeks follow-up, the patient had made a good recovery. Examination of the hands revealed hyperlaxity of the fingers, and there was in fact a similar history described by the patient's brother.

3. Discussion

There are six variants of EDS of which type III EDS (joint hypermobility syndrome) is the most frequent. Type IV is an autosomal dominant variant, known as vascular Ehlers–Danlos syndrome (VEDS) and is rare, accounting for ~10% of the Ehlers–Danlos variants. The underlying genetic mutation is that of COL3A1 gene, resulting in abnormalities in type III procollagen production and synthesis.

The diagnosis of VEDS is mainly clinical and can be confirmed biochemically by showing reduced type III collagen production by fibroblasts [1] or through molecular analysis of the mutated COL3A1 gene [2–4].

In this case, the patient presented with acute haemoptysis and collapse secondary to a spontaneous haemo-pneumothorax.

It should be noted that joint hypermobility in VEDS patients is less apparent than in patients with other types of EDS [5]. Certainly, spontaneous pneumothoraces have been described in patients with VEDS [6] but haemorrhagic pulmonary complications are less well described [7].

Management of patients with VEDS is difficult because there is no specific treatment. Vascular complications are generally sudden and catastrophic and gradual vascular dilatation such as seen in Marfan's syndrome is not a feature of VEDS. Patients should be genetically counselled and warned about the associated risks of the syndrome.

A paper by Pepin et al. followed-up 220 patients with confirmed EDS type VI (VEDS) and 199 of their relatives [8]. Complications during childhood were uncommon but 80% of patients presented with their first complication before 40 years of age. Alarmingly, the median survival of the entire cohort was only 48 years. Most deaths resulted from arterial rupture and 12 of the 81 females died as a result of complications of pregnancy.

In summary, VEDS is a rare but serious disease. Patients may present to the cardiothoracic department with common diagnoses such as spontaneous haemo or pneumothoraces and surgery may be technically demanding as tissues are potentially friable. In the long-term, genetic counselling is a priority, especially in females, as the risks of pregnancy are high, and referral to a specialist is advocated.

Thoracic surgeons and respiratory physicians should be aware of the possible pulmonary presentations of connective tissue disorders and arrange appropriate investigations and specialist referrals when such patients present.

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