A 33-year-old female with cough and dyspnoea mimicking asthma bronchiale

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Case history

A 33-year-old female patient, without prior chest symptomatology, was referred to hospital with symptoms of cough, dyspnoea and chest pain, which had persisted for the last 3.5 months. Her medical history revealed that she had been admitted to the emergency department when her symptoms first developed. At this point she had been prescribed non-specific antibiotic and bronchodilating treatment, as paracardiac infiltration was detected on chest radiography and wheezing on auscultation. At follow-up, she was told that the infiltration on chest radiography had regressed; however, cough and chest tightness persisted and progressed. The patient received high-dose inhaled corticosteroids and long-acting β_2-agonists that did not help, so was referred.

Physical examination

The following findings were identified on examination: dyspnoea at rest; absence of finger clubbing, lymphadenopathy or cyanosis; blood pressure 120/80 mmHg; heart rate 80 beats per minute and regular; respiration 22 breaths per minute; and wheezing and bilateral ronchi on auscultation. The systemic examination was otherwise normal.

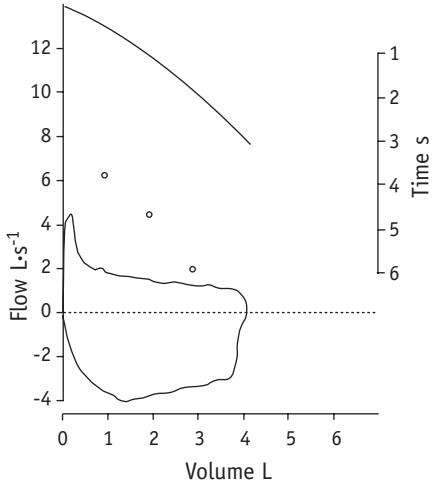

Figure 1
Flow–volume and time–volume curve.

Table 1 Pulmonary function test report

Parameter	Measured	Pred	% Pred
FVC L	4.21	3.84	110
FEV_1 L	2.02	3.34	60
FEV_1 % FVC %	46	82.60	57
FIVC L	4.22	3.84	110
FIV_1 L	4.22	3.34	126
FIV_1 %	100	82.6	121
$FEF_{25–75}$ L·s^{-1}	1.54	3.91	39
PEF L·s^{-1}	4.97	7.33	68
PIF L·s^{-1}	3.96		
FET s	2.82		
FEF_{25} L·s^{-1}	1.76	6.29	28
FEF_{50} L·s^{-1}	1.52	4.52	34
FEF_{75} L·s^{-1}	1.30	2.06	63
VC L	4.25	3.85	110
FEV_1 % VC %	47.87	82.60	58
IVC L		3.85	
ERV L	1.33	1.23	108
V_T L	1.21		
V_E L·min^{-1}	26.38		
f_R L·min^{-1}	21.74	15	145
t_i s	1.12		
t_e s	1.64		
t_i/t_{tot} L	0.41		
V_T/t_e L·s^{-1}	1.08		

Investigations

Complete blood count and routine biochemical tests were normal. Chest radiography was also normal. Pulmonary function test was performed, the results of which are presented in table 1 and figure 1.

A thoracic computed tomography (CT) was also carried out and is shown in figure 2.

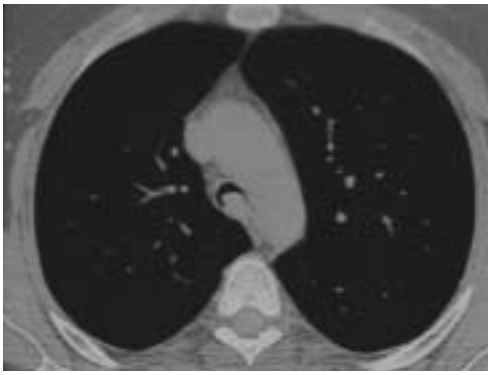

Figure 2
Thoracic CT scan.

Task 1
Interpret the results from the pulmonary function tests in figure 1 and table 1.

Task 2
Interpret the CT scan.

Answer 1
The pulmonary function test revealed variable intrathoracic upper airway and small airways obstruction.

Answer 2
CT scan revealed a 1-cm-mass lesion protruding into the tracheal lumen 1 cm above the carina.

In addition, fibreoptic bronchoscopic results were obtained and can be seen in figure 3. This procedure confirmed the presence of a smooth-surfaced 1-cm-mass lesion obstructing two fifths of the tracheal lumen, 1 cm above the carina.

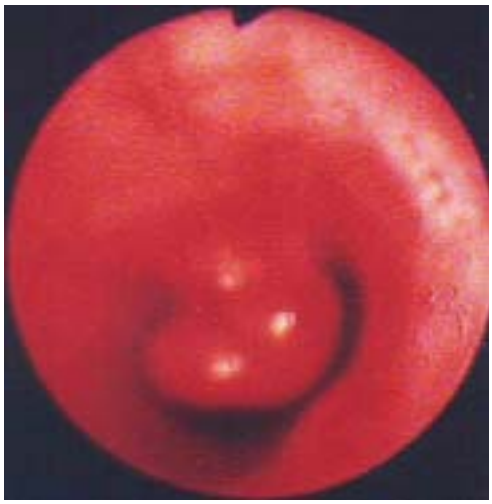

Figure 3
Bronchoscopic view.

Finally, a forceps biopsy and intratumoral fine-needle aspiration were performed.

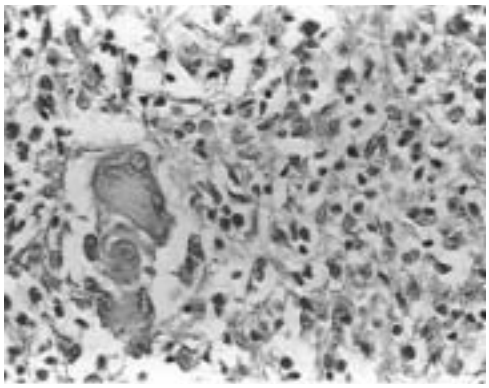

Figure 4
Bronchoscopic biopsy of the mass lesion.

Task 3
Interpret the histopathological result.

Task 4
Based on the evidence presented to you, suggest a diagnosis.

Task 5
Suggest a treatment option.

Answer 3
The biopsy of the specimen showed multinuclear giant cells. There was no formation of granuloma or existence of an intracytoplasmic foreign body.

Answer 4
Inflammatory pseudotumour.

Answer 5
Surgical extirpation of the mass lesion.

Clinical course

During tracheotomy, the mass lesion protruding from the posterior trachea was excised with the membranous part, and the mediastinal pleura was placed over the trachea as flap. The histopathological examination of this lesion was consistent with the bronchoscopic biopsy.

The patient was discharged on the 7th postoperative day with a normal pulmonary function test and chest radiography, and no pulmonary symptoms.

Discussion

Inflammatory pseudotumour (IP) of the lung, a non-neoplastic lesion of unknown aetiology, is thought to occur as a result of localised inflammation due to increased injury [1] and is responsible for <1% of all lung tumours. In addition, intratracheal localisation is quite rare (2.7%) [2].

Many synonyms are used to describe IP because of its variable histology. Plasma cell granuloma is another term that is commonly used, as well as histiocytoma of the bronchus, benign histiocytic tumour, vascular endothelioma, plasmacytoma, inflammatory fibrous histiocytoma and post-inflammatory pseudotumour, depending on the dominant cell type [1, 3, 4]. Berardi *et al.* [5] previously identified 19 different synonyms for the same pathological entity. Pulmonary parencyhma is the most affected site, whereas endobronchial and endotracheal localisations are quite uncommon [6, 7]. Trachea and bronchi constitute 6.7% and trachea alone constitutes 2.7% of all reported cases [6].

IP can be diagnosed at any age, but most of the cases are identified in patients <40 years [5, 6]. The age range of patients was found to be 1–72 years in one study covering 181 patients, and there was no significant sex difference [4].

Clinical findings of IP are variable, according to localisation and size. It can be asymptomatic, although 70% of all cases are symptomatic. Stridor, wheezing, cough, chest pain and haemoptysis may all be accompanying complaints [2, 6]. Pneumonia or upper respiratory tract infection is present in one third of all patients. Dyspnoea is the predominant symptom, especially in intratracheal IP [6]. Some cases have been described as status asthmaticus because of the presence of wheezing. The case presented here was initially diagnosed and treated as corticosteroid-resistant asthma bronchiale because of progressive dyspnoea and wheezing.

Radiographic and bronchoscopic examinations are the most important diagnostic tools for obstructive tracheal lesions. If bronchoscopic biopsy is insufficient, surgical biopsy may be essential to get subsequent amounts of a biopsy specimen. Since IP can demonstrate aggressive behaviour and may mimic inflammatory sarcoma, both clinically and pathologically, complete surgical resection seems to be the most appropriate therapeutic choice [1–3]. In the present case, the lesion was excised by tracheal wedge resection. As the origin of the lesion was from the posterior tracheal wall and had a wide base, endobronchial therapy, which could result either in perforation or insufficient resection, was not considered. In addition, the patient's dyspnoea did not necessitate immediate intervention and, thus, elective surgical resection was planned.

There are differing views concerning corticosteroid therapy. According to some literature, complete regression may be possible with corticotherapy, whereas some literature states that corticotherapy has no therapeutic effect [3]. In this case, pulmonary function responded well to corticotherapy given prior to surgery.

In summary, tracheal IP is an uncommon non-neoplastic lesion. The prognosis is generally excellent and recurrence is quite rare. Tracheal obstruction can cause severe dyspnoea and cough. Pulmonary function tests play an important role in the differential diagnosis of the disease. Pulmonary symptoms subside with complete extirpation of the lesion. The patient presented here has subsequently completed her first year following surgery and has no clinical symptoms.

In conclusion, IP, when located in central airways, is a rare entity that should be included in the differential diagnosis of respiratory distress.

References

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