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Pyothorax Revealing an Inflammatory Endobronchial Polyp: A Case Report

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Abstract **Case Report**

An inflammatory polyp of the bronchus is a rare, benign, endobronchial tumor histologically consisting of a fibrovascular stroma covered with normal respiratory epithelium. We report a case of an inflammatory polyp originating from the right intermediate trunk revealed by a right pyothorax. This is the case of a 75-year-old man, an active smoker, who presented a productive cough with greenish sputum, dyspnea associated with lower right chest pain, in a febrile context and deterioration of the general condition, with right hemfield fluid syndrome. The standard chest radiograph showed: a dense homogeneous opacity of the lower right hemithorax presenting a D shaped pleural effusion aspect. The chest CT revealed a tissue lesion localized on the intermediate trunk associated to an aerated atelectasis of the right lower lobe, a large right pleural effusion with signs of infection with pleural thickening. The bronchoscopy showed the presence of a polypoid formation localized in the intermediate trunk whith purulent secretions.

Keywords: Endobronchial polyp, pyothorax, bronchoscopy.

CASE REPORT

A 75-year-old man, who's an active smoker at 34 pack year and has never been treated for tuberculosis, presented with a 2 months history of a productive cough with greenish sputum. He did not present any associated hemoptysis. The patient had dyspnea associated with a lower right thoracic pain of moderate intensity without any particular irradiation. These symptoms are associated to a fever, anorexia, asthenia and weight loss. The clinical examination revealed a conscious patient, WHO PS at 2, temperature at 37.5, respiratory rate at 20 cpm, blood pressure at 130/70 mmHg, SaO2 93% in ambient air, heart rate at 88 bpm, and a syndrome of fluid effusion of the 2/3 of the lower right hemithorax.

Standard thoracic radiography showed: a dense homogeneous opacity of the 2/3 of the lower right hemithorax presenting a D shaped pleural effusion aspect. The main diagnosis at this stage was a right pleurisy.

The thoracic CT objectified a tissue lesion localized on the intermediate trunk associated to an aerated atelectasis of the right lower lobe. This lesion is isodense and spontaneously enhanced after the injection of contrast product with mediastinal lymphadenopathy. The CT scan also showed diffuse emphysema and a large right pleural effusion with signs of infection with pleural thickening.

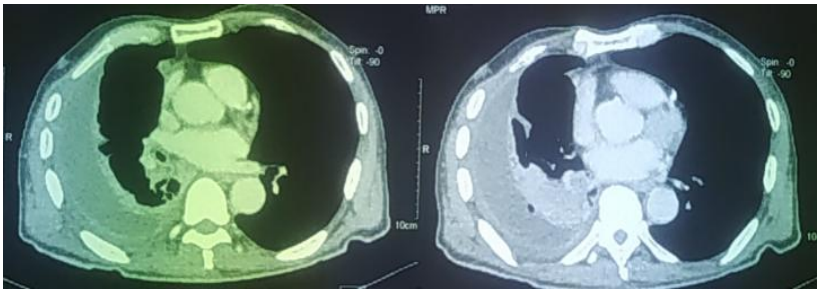

Figure-1: Axial thoracic CT scan showing an intraluminal lesion filling the intermediate bronchus

The thoracentesis withdrew a turbid pleural fluid of which the protein level was 47.6g / l, the neutrophils were 70%, and the bacteriological study was sterile.

A thoracic drainage was performed and the patient was started on an antibiotic therapy combining amoxicillin clavulinic acid, gentamycin and metronidazole. Respiratory physiotherapy was also initiated during, with good clinical and biological follow up and the start of radiological improvement. The bronchoscopy showed the presence of a polypoid formation localized in the intermediate trunk which remained catheterizable and containing purulent secretions, the endoscopic aspect of rest of orifices and spurs was normal, the bacteriological study of bronchial aspirations isolated a ceftazidime-resistant pseudomonas aeroginosa, the Acid-fast bacillus in bronchial secretions was negative.

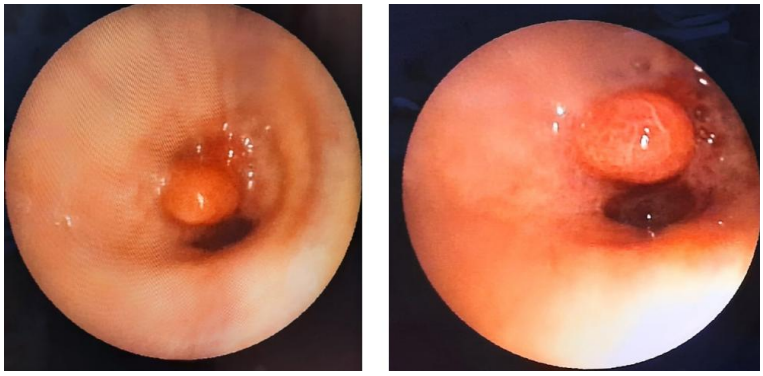

Figure 2: Endoscopic view of the polyp in the intermediate trunk

The pathology study of the biopsy of the tissue formation showed a respiratory mucosa with a regular ciliated pseudo-stratified epithelium. The adjacent fibrous chorion is the site of hemorrhagic suffusions and a moderate and polymorphic diffuse inflammatory infiltrate made up of lymphocytes, plasma cells, and numerous neutrophils. There were no signs of malignancy,

The cytodiagnosis spoke of hemorrhagic and inflammatory cytology without signs of malignancy.

DISCUSSION

A similar case in the literature of purulent pleurisy revealing an endobronchial inflammatory polyp has not been objectified. Protruding lesions of the trachea and bronchi are often malignant diseases. Benign lesions can include teratomas, hamartomas, and lipomas, but inflammatory polyps are relatively rare [1].

In general, benign endobronchial polyps can be classified as inflammatory or non-inflammatory. However, the exact classification of fibroepithelial polyps remains unclear. Some reports have classified fibroepithelial polyps as inflammatory, while others have argued that inflammation is the result of intermittent airway obstruction caused by its mass effect [2].

Four mechanisms of bronchial inflammatory polyps formation were proposed and include:

- Stagnation of purulent secretions produced from a peripheral focus of infection, resulting in secondary inflammation of the bronchial wall [3].
- Primary inflammation of a bronchus [4].
- Increased vascular permeability, leading to submucosal accumulation of exudate and mucosal protrusion [5].
- Stagnant lymphatic flow due to localized hyperplasia and inflammation of the bronchial mucosa (chronic hyperplastic bronchitis [5].

In our case, the histologic findings were suppurative inflammation, including neutrophil invasion, inflammatory cells, and fibroblasts. There was no submucosal edema or hyperplasia. Therefore, it suggests stagnation of purulent secretions produced from a peripheral focus of infection associated with the formation of a lung abscess, leading to secondary inflammation of the bronchial wall and the formation of inflammatory bronchial polyps. With malignant tumors, bronchial stenosis due to the tumor, with complications of a lung abscess due to obstructive pneumonia, can occur.

Symptoms reported include cough, sputum, haemoptysis, fever, dyspnoea and recurrent pneumonia [6-8]. A study stated that slow tumoural growth was the reason for late manifestation of the symptoms ranging from a few months to several years before diagnosis [6].

Another study reported that a large number of the patients have abnormal chest radiographic findings, but most of the abnormal radiographic findings do not include a direct shadow of the tumour, and almost half of the shadows found are judged to be instances of consolidation or infiltration due to atelectasis and pneumonia of the distal lung [7].

In the macroscopic investigation, all the lesions are seen as well-circumscribed, soft, yellow masses ranging in size from 1 to 3cm in the greatest diameter, with a smooth round surface [8-10].

In our case histologic examinations were made by more than two pathologists; However, the histologie structure showed no invasive qualities, and the clinical course supported a nonmalignant diagnosis. One outstanding feature of many of these growths is the inflammatory hyperplasia [5].

Moreover, an inflammatory hyperplasia may be the site of cellular developments that would at a later stage place the lesion among the true neoplasms, benign or malignant [5].

It has been reported that recurrent pneumonia attacks may induce sufficient nuclear atypia to suggest malignancy in endobronchial brush cytology of this tumour [8].

CONCLUSION

Benign endobronchial tumors are rare. the fact of differentiating them from malignant tumors remains a problem. bronchoscopy with biopsy is essential, and it retains all its interest in the etiological assessment of pulmonary abscess and recurrent pneumonia.

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