CASE REPORT

Bronchial schwannoma: a singular lesion as a cause of obstructive pneumonia

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SUMMARY

Bronchial schwannomas are very rare pulmonary lesions, but its awareness is important to reach correct diagnosis and decide proper intervention. Clinical and radiological characteristics are mainly unspecific and pathological examination usually provides the definite diagnosis. In small lesions, endoscopic approach may be sufficient, but in large lesions associated with organising pneumonia surgical intervention may be required. Prognosis is typically favourable. We describe a case of a woman, aged 66 years, with productive cough and sporadic haemoptysis, dyspnoea, anorexia, excessive sweating and weight loss with 2 months evolution. CT scan showed a soft tissue dense lesion on the left hilum with 3.75 cm with 18-Fludeoxyglucose uptake. Left upper lobectomy was performed. Gross examination revealed a polypoid mass without necrosis, histologically showing cellular dense (Antoni A) and less dense (Antoni B) areas with Verocay bodies, slightly pleomorphic spindle cells, without mitotic activity and positive for S100 protein on immunohistochemistry.

productive cough and sporadic haemoptysis, dyspnoea, anorexia, excessive sweating and weight loss with 2 months evolution. Occupational history was excluded and allergies were denied.

Pathological background included hiatus hernia, glaucoma, arterial hypertension, vertigo and atrial fibrillation.

Regular medication was lansoprazole, idabenone, propafenone, diazepam, betahistine hydrochloride, triflusal and latanoprost.

INVESTIGATIONS

Physical evaluation showed the absence of skin lesions and colour abnormalities or lower limb oedema. Arterial blood pressure was 130/70 mm Hg and O₂ saturation was 97%. Cardiac auscultation revealed arrhythmic beatings without murmurs, with 80 bpm. Pulmonary auscultation discovered diminished lung sounds on the left apex.

Blood tests did not demonstrate relevant findings.

High-resolution CT (HRCT) scan showed a soft tissue dense lesion on the left hilum with 3.75 cm with no cleavage line with the left pulmonary veins and doubts about the existence of cleavage point with the left atrium (figure 1). Additional characterisation by positron emission tomography–CT (PET-CT) scan revealed mass uptake of 18-Fludeoxyglucose (¹⁸F-FDG) without other catching points.

Endobronchial cytology was performed and described as 'unspecific inflammation'.

Surgery was considered and a left upper lobectomy was performed.

Gross examination revealed an endobronchial polypoid mass with 3.7 cm, lobulated, tan-brownish in cut section, with no necrosis.

BACKGROUND

This case was written due to its rarity and to increase awareness of the entity. Bronchial schwannomas are very rare, and their clinical and radiological presentations are non-specific and may mislead the clinician into a diagnosis of malignant tumour. Knowledge of these characteristics might improve the disease approach by multidisciplinary teams and in selected cases a more conservative approach like bronchoscopy may be employed.

CASE PRESENTATION

A woman, aged 66 years and a non-smoker, was admitted in the Pulmonology Department with

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Figure 1 High-resolution CT (HRCT) scan showing a soft tissue dense lesion on the left hilum.

Figure 2 (A) Large polypoid endobronchial mass, with complete occlusion of lumina; no necrosis is seen and small foci of haemorrhage are registered. (B) The lesion is composed by spindle cells, with more cellular areas, and dilated hyaline wall vessels, H&E $\times 40$. (C) Verocay bodies are frequent and prominent, H&E $\times 200$. (D) Diffuse immunostaining for S100 protein, $\times 100$.

Histological examination was performed on H&E stained slides observed under a light microscope—Nikon Eclipse 50i—and images were obtained using a Nikon-Digital Sight DS-Fi1 camera.

Histological evaluation revealed an expansive mesenchymal lesion with cellular dense (Antoni A) and less dense (Antoni B) areas with slightly pleomorphic spindle cells, but without mitotic activity. Verocay bodies were evident as well as cystic areas, some hyaline blood vessels and iron pigment (evidenced by Prussian blue stain).

Immunohistochemistry studies were performed on one representative block of the lesion, resorting to avidin–biotin–peroxidase complex detection system and performed on a Ventana Marker Platform Bench Mark ULTRA IHC/ISH and showed diffuse positivity for S100 protein (4C4.9, Ventana, Arizona, USA), Vimentin (V9, Ventana, Arizona, USA), Synaptophysin (MRQ-40, Cell Marque, California, USA) and neuron-specific enolase (NSE) (MRQ-55, Cell Marque, California, USA), with negativity for AE1/AE3 (PCK26, Ventana, Arizona, USA), Chromogranin A (LK2H10, Ventana, Arizona, USA), CD117 (9.7, Ventana, Arizona, USA), Melanosome (HMB45, Ventana, Arizona, USA), CK7 (SP52, Ventana, Arizona, USA) and thyroid transcription factor (TTF1, C), thus giving the diagnosis of bronchial schwannoma (figure 2).

The Ki67 (30-9, Ventana, Arizona, USA) proliferative index evaluation was also studied, with a low result (2%).

Surgical margins were negative. The remaining lung showed organising pneumonia secondary to bronchial obstruction.

DIFFERENTIAL DIAGNOSIS

Bronchial schwannomas are rare entities and may not arise as primary diagnosis on this type of lesions.

On gross examination a pathologist may suspect carcinoid tumour, but H&E evaluation normally shows schwannoma typical morphological pattern and expression of S100 protein provides the diagnosis. If typical morphology of schwannoma is not present, leiomyoma and inflammatory myofibroblastic tumour may be considered, but the first is usually negative for

S100 protein and the latter is accompanied by a dense inflammatory infiltrate.¹

TREATMENT

Surgical treatment consisted in an upper left lobectomy.

After surgery, respiratory kinesiotherapy, prophylactic antibiotics and analgesic drugs were the basis of the therapeutic plan.

OUTCOME AND FOLLOW-UP

Surgery underwent without complications. The patient was evaluated 3 weeks after surgery and an X-ray was performed, showing elevation of the left diaphragmatic cupula. No clinical symptoms were registered and there were no signs of tumour relapse.

DISCUSSION

Schwannomas, also known as neurilemmomas or neurinomas, are relatively common in the mediastinum,² but intrapulmonary location is very rare, with only scarce reports in the western literature,³ and with an estimated incidence of about 0.2% of all pulmonary tumours.⁴

Schwannomas are more common in middle age, with no differences registered between gender, and clinical manifestations are vary, depending on size and location.⁵ Clinical manifestations normally are dyspnoea, recurrent cough, haemoptysis and infections.^{1 5} Chest X-ray may be helpful in differential diagnosis, but fiberoptic bronchoscopy with biopsy usually provides definite diagnosis;⁵ however, in some cases, it may not be enough.¹

Radiologically, bronchial schwannomas show oval or lobulated appearance, well circumscribed, homogeneous and with soft tissue density,⁶ and if occludes, a large bronchus atelectasis may be the only finding.⁷

Histologically the presence of typical Antoni A and Antoni B patterns, as well as Verocay bodies' formation on H&E evaluation and expression of S100 protein, confirms the diagnosis of schwannoma.^{1 6 7}

Bronchial schwannomas are usually encapsulated, which can enable resection by less-invasive techniques, like removal

through bronchoscopy;¹ however, if resection is inadequate, tumour recurrence may occur.⁷ If the lesion is large, centrally located and complicated by obstruction pneumonia, a lobectomy may be necessary, normally with favourable outcome.^{1 6}

In conclusion, bronchial schwannomas are rare, but awareness of the entity is important in order to reach a correct diagnosis and decide proper bronchoscopic/surgical intervention, based on the patient's clinical picture.

Learning points

- Bronchial schwannoma is a rare entity that should be considered in the differential diagnosis of endobronchial lesions.
- Imaging examination is not specific and definitive diagnosis is provided by histological evaluation.
- Surgery may be necessary if a larger lesion or obstructive pneumonia is present, usually with good results.

Contributors TN performed thoracic surgery on patient and acquired all the clinical data necessary for this submission and also involved in radiological data interpretation. VS performed the gross examination and discussed the planning of the article. RCO and LC performed histological evaluation and discussed the differential diagnosis. RCO worked on conception and design of the article. All authors read and approved the final manuscript.

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