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Pseudosarcomatous fibrovascular proliferative tissue masquerading as a primary subglottic angiosarcoma

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Abstract

A unique case of pseudosarcomatous fibrovascular proliferative tissue causing biphasic stridor and simulating a primary subglottic angiosarcoma is reported.

The patient presented with a wheeze and was diagnosed initially with asthma. He subsequently developed worsening biphasic stridor. Flexible nasendoscopy revealed a subglottic mass obstructing the airway. The mass was removed with a carbon dioxide laser and the patient's condition improved dramatically. The specimen was difficult to interpret histologically and was thought at first to be a novel case of a primary subglottic angiosarcoma. However, the slides were reviewed by expert soft tissue pathologists in the UK and USA, and a final diagnosis of a pseudosarcomatous fibrovascular proliferative lesion was made.

This case highlights the important principle of seeking additional opinions before making a malignant diagnosis in an atypical site. Our report also emphasizes the importance of good clinico-pathological liaison, especially in difficult cases.

Key words: Granulation Tissue; Larynx; Haemangiosarcoma; Laser surgery

Introduction

Laryngeal angiosarcoma is an extremely rare condition.[1] Patients may present with hoarseness, dysphonia, dyspnoea or haemoptysis, depending on the location of the tumour.[2,3] The majority of laryngeal angiosarcomas develop in the supraglottis (61.5 percent) and most frequently involve the epiglottis.[1] This paper highlights a new case of a pseudosarcomatous fibrovascular proliferative lesion, i.e. atypical granulation tissue, simulating a spontaneous subglottic angiosarcoma. We discuss the presenting features and the pathological path taken to reach a final diagnosis.

Case report

A 70-year-old man attended the ENT clinic with dyspnoea associated with haemoptysis and worsening biphasic

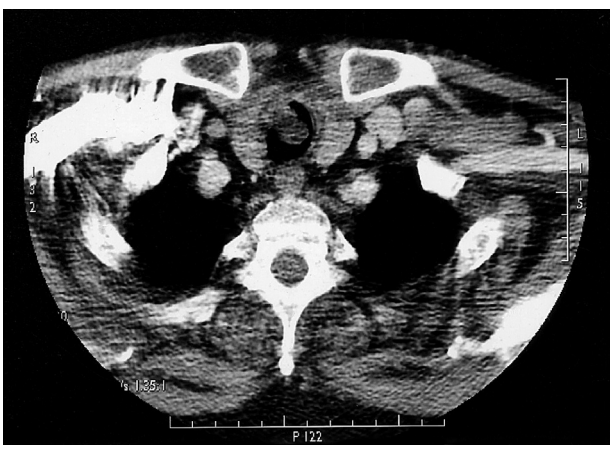

Fig. 1

Axial post-contrast CT demonstrating a polypoidal mass in the lumen of the upper trachea.

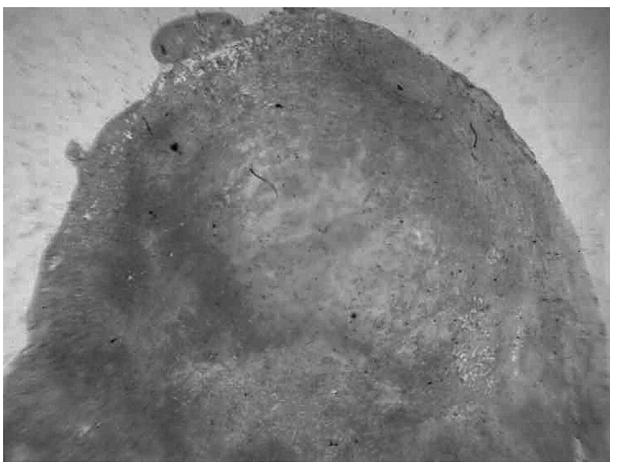

Fig. 2

Photomicrograph showing a section of the polypoidal, haemorrhagic lesion. (H & E, ×10)

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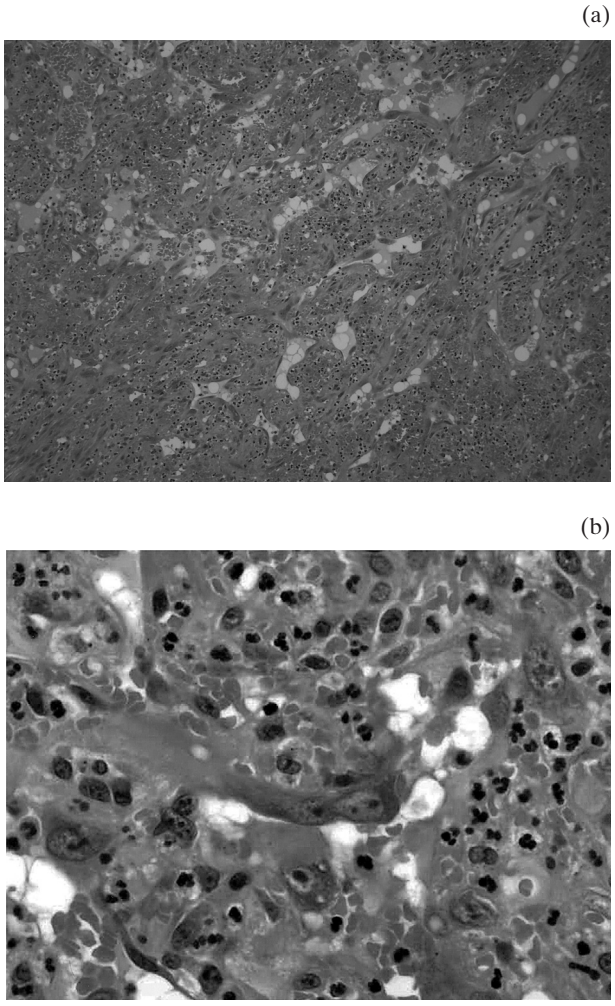

FIG. 3

(a) Photomicrograph showing many vascular channels lined by numerous atypical cells with prominent nuclei. (H & E, ×20) (b) Photomicrograph showing large, atypical cells with pleomorphic vesicular nuclei containing prominent eosinophilic nucleoli. (H & E, ×40)

stridor. He was admitted one week previously with a 'wheezy chest' and was diagnosed with asthma. However, his condition did not improve with bronchodilators or steroids. The patient was a non-smoker who had never had radiotherapy to his neck. Fifteen months previously he had been intubated for four days because of difficulty in breathing.

Flexible nasendoscopic examination revealed a subglottic mass prolapsing into the glottis and causing near total occlusion. This finding was confirmed by CT scan of the neck (Figure 1). Urgent microlaryngoscopy revealed a large, broad-based, red, ulcerated mass extending from the right subglottic region into the lumen of the trachea. The mass was removed completely with a laser (carbon dioxide, 2 W) and the patient's condition improved dramatically. He had a recurrence at four months from presentation and required a further laser excision. At the time of writing (six months after re-lasering) he remained disease-free.

On histological examination, the specimen was a polypoidal haemorrhagic mass (Figure 2). The lesion was composed of many vascular channels lined by large, atypical cells with pleomorphic vesicular nuclei containing extremely prominent, multiple, eosinophilic nucleoli (Figure 3). The cells expressed the vascular markers CD31 and CD34 (Figure 4) but were negative for cytokeratin, muscle marker CD68 and neural marker S-100 protein. There was abundant cytoplasm as well as intracytoplasmic lumina. Abnormal mitotic figures and numerous multinucleated elements were present; however, the mitotic index was low. These findings were compatible with a provisional diagnosis of an angiosarcoma. The slides were reviewed by expert British and American pathologists who discerned that certain important features for a definite malignant diagnosis were missing, i.e. stratification of atypical cells around vessels and the number of mitotic figures. A mutual agreement was made by the pathologists to refer to this unusual lesion as a pseudosarcomatous fibrovascular proliferation or atypical granulation tissue.

Discussion

Angiosarcoma is a highly malignant tumour of vascular endothelial cell origin and has a five-year survival rate of 22 per cent.[4] The neoplasm accounts for less than 0.1 per cent of all head and neck malignancies.[5] There are only 13 cases of laryngeal angiosarcomas reported in the British literature.[1] In eight of the 13 cases the lesions were found in the supraglottic region, whilst in four cases the tumours were located on the vocal folds.[1] In one case the lesion was a malignant transformation of a subglottic haemangioma.[6]

In our patient, some of the histological features of the lesion removed from the airway were compatible with the diagnosis of an angiosarcoma. However, a primary subglottic angiosarcoma has never been reported and therefore additional opinions from eminent pathologists in the UK and USA were obtained. They independently reached the conclusion that the morphological features of the specimen were more appropriate for a 'pseudosarcomatous fibrovascular proliferation', i.e. atypical granulation tissue. This pathological diagnosis was based on the lack of true multi-layering. In addition, immunostaining for smooth muscle actin revealed that many of the small vessels had intact outer pericyte layers, which is an infrequent finding in angiosarcoma. Lastly, the anatomical location and the polypoidal nature of the lesion were highly unusual for an angiosarcoma. The pathologists also excluded the diagnosis of

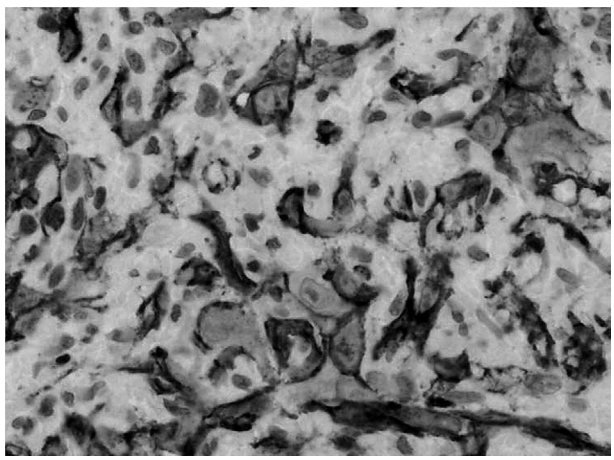

FIG. 4

Photomicrograph showing large cells staining positive for vascular marker CD34. (PAP, ×40)

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pseudosarcomatous squamous cell carcinoma because the atypical cells in the vessels and in the stroma were repeatedly negative for keratins.

The pathogenesis of the lesion found in our patient is unknown. Radiation was an unlikely pathogenic factor because there was no history of any previous exposure. The patient had been intubated previously for four days in ITU because of difficulty in breathing. It is unclear whether the mass was present at the time of intubation or resulted as a complication of the process. As the history of intubation may be relevant in the aetio-pathogenesis of the lesion, it is crucial that the pathologist has a full clinical history at the time of reporting. The importance of good communication between clinicians and pathologists cannot be over-emphasized.

- **The authors report what they claim to be pseudosarcomatous tissue in the larynx**
- **The lesion was excised on two occasions using a carbon dioxide laser**
- **The need for close collaboration between clinician and pathologist is emphasized**

Interestingly, the patient was thought to be asthmatic because of the wheezing at presentation. Recently, Persaud *et al.* (2001)[7] reported that obstructive lesions of the upper airway are frequently misdiagnosed as asthma. The present case reinforces this observation and also emphasizes the need to keep an open mind when diagnosing patients with wheezing and to carefully review those not responding to medical treatment. Our report also highlights the importance of good clinico-pathological liaison, especially in difficult cases. Regular multi-disciplinary meetings, in which the pathologist has a key role, are important in achieving this objective.

In summary, we present a new case of biphasic stridor caused by a pseudosarcomatous fibrovascular proliferative lesion that was initially thought to be a primary subglottic angiosarcoma. Removal of the abnormal tissue was achieved using a carbon dioxide laser as a surgical cutting tool. This unique case highlights the important principle of obtaining additional expert opinions before making a malignant diagnosis in an atypical site, especially if there are serious management implications such as major surgery.

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Addendum

Since this article was accepted for publication, the patient had a further recurrence requiring laser treatment and the specimen is being reviewed by expert international pathologists.

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