Unusual Parapharyngeal Space Neoplasms

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Abstract Parapharyngeal space is a potential space in the neck in the form of an inverted pyramid and can be divided into pre- and post-styloid compartment. Salivary gland tumors commonly arise from the pre-styloid compartment and neurogenic tumors and paragangliomas from the post-styloid compartment. These tumors can have a highly variable presentation due to their location which often also makes it difficult to get a confirmed pre-operative diagnosis due to their inaccessibility. In such cases, diagnosis is often radiological. We present two cases of parapharyngeal space masses, where, in spite of thorough pre-operative workup, final diagnosis turned out to be a surprise.

Keywords Parapharyngeal space tumors · Extra cranial meningioma · Angiosarcoma · Head and neck

Case Summary

Case 1

A 37-year-old male patient presented with complaints of change in voice and dysphagia for 5 months. On examination, he had left hypoglossal palsy, and medial bulge of the left tonsil and lateral pharyngeal wall. There was no palpable swelling in the neck. Fine needle aspiration cytology (FNAC) from the intra-oral swelling was suggestive of mesenchymal spindle cell tumor. Contrast enhanced computed tomography (CECT) scan showed a heterogeneously enhancing soft tissue lesion in the pre-styloid compartment pushing the great vessels postero-laterally. MRI scan showed a well-encapsulated, heterogeneously enhancing lesion with central necrosis in the left parapharyngeal. It was T1 isointense and T2 hyperintense (Fig. 1a, b). Based on the location and radio-

Fig. 1 **a** T2W image showing well-circumscribed, heterogeneously enhancing lesion antero-medial to great vessels. **b** Lesion causing narrowing of oropharyngeal and hypopharyngeal airway. **c** Histopathological image showing whorling pattern with amyloid stroma

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Fig. 2 **a** Tumor seen in the post-styloid compartment, postero-lateral to the great vessels. **b** Tumor lying below the carotid bifurcation with a tumor blush and prominent blood supply from the occipital artery. **c** Histopathologic image—angiosarcoma

logical features, a differential diagnosis of minor salivary gland tumor or schwannoma arising from the hypoglossal nerve/sympathetic plexus was made. Patient underwent excision of the mass via a trans-cervical approach. Histopathologic analysis revealed it to be a meningothelial meningioma (Fig. 1c). On immunohistochemistry, it was positive for vimentin, S100, EMA, and negative for chromogranin. Analyzing it retrospectively, there was no calcification, intracranial and intra-spinal extension to suggest meningioma; it was isointense on T1W images and hyperintense on T2W images. Though this alone was insufficient for diagnosis of meningothelial meningioma.

Case 2

A 54-year-old male smoker presented with progressively increasing swelling in the right side of the neck for 6 months. On examination, there was a 5×4 cm firm, non-tender, non-pulsatile swelling with restricted mobility in the right level III. FNAC from the lesion was non-diagnostic. CECT scan showed a highly vascular, well-defined lesion in the post-styloid compartment pushing the great vessels anteriorly. MR angiography showed a hypervascular mass below the level of the carotid bifurcation in the post-styloid

compartment with prominent blood supply from the right occipital artery showing a tumor blush (Fig. 2a, b). Patient underwent excision of the parapharyngeal mass via a trans-cervical approach. Histopathologic analysis showed a vascular malignant tumor (Fig. 2c) with immunohistochemistry positive for CD31 and negative for S100, synaptophysin, and chromogranin. It was consistent with angiosarcoma. Though it was highly vascular, its position was below the carotid bifurcation unlike paragangliomas. A diagnosis of hypervascular schwannoma was hence considered. Also, unlike a sarcoma, it was well circumscribed with no infiltration of the surrounding tissue. So, in this case also, angiosarcoma could not have been considered pre-operatively.

Conclusion

Parapharyngeal space tumors can have variable histology and presentation. Due to their location, pre-operative diagnosis is often difficult. Radiologic imaging is essential for diagnosis. These should be studied properly for any deviation from regular and interpreted accordingly. We should also be prepared for histological surprises.