Fine Needle Aspiration Cytology of Parapharyngeal Tumors

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ABSTRACT
Parapharyngeal space tumors (PPS) are rare, representing only 0.5% of head and neck neoplasms. 7 patients diagnosed with PPS tumors which presented to us within a span of two years were included. Cytopathologic evaluation was done by fine needle aspiration cytology, computed tomography and ultrasonography guidance wherever necessary. Histopathology confirmation was available in all the cases. The age of the patient ranged from 15-55 years with male to female ratio 1:1. The commonest clinical presentation was a slowly increasing painless mass in neck. Out of 7 cases the tumors encountered were pleomorphic adenoma (02), neurofibroma (01), Schwannoma (01), Paraganglioma (01), Lipoma (01), Angiofibroma (01). Two false negative cases were encountered. Overall diagnostic accuracy being 71.4%.

With proper clinical and radiological assessment, FNAC can be extremely useful in diagnosing most of these lesions except a few which need histopathological confirmation.

Keywords: Parapharyngeal Space, Computed Tomography, Magnetic Resonance Imaging, Parapharyngeal Tumors, Cytology

Introduction
PPS is a rare location for head and neck tumors (1). It is a space in the supra hyoid neck that contain fat and is surrounded by several other spaces defined by the fascial layers of neck (15). Para pharyngeal space tumors often present therapeutic and preoperative diagnostic problems due to variable nonspecific symptoms and complex anatomy of the region. Most of the lesions (70-80%) are benign (3) comprising of salivary gland tumors, neurogenic tumors and paragangliomas in descending order of frequency (17). Other rare tumors include lipoma, hemangioma, aneurysm, branchial cleft cyst, meningioma, chordoma, and sarcoma (2). On FNAC cytomorphology of meningioma mimics that of other head and neck tumours like acinic cell carcinoma and paraganglioma etc.(18). Therefore, the possibility of meningioma should be kept in the differential diagnosis of PPS tumour.

The most common malignant tumour in this region is adenoid cystic carcinoma by Spiro et al. (14). Malignant peripheral nerve sheath tumour is rare at this site and have grave prognosis (4). Occurrence of metastatic papillary thyroid carcinoma in the PPS is extremely rare (13).

The patient usually present with swelling of two specific sites namely oropharynx and lateral neck (cervical or submandibular mass), there may be oral cavity bulge, serious otitis, headache, syncope or even cranial nerve palsies involving vagus and hypoglossal nerves, leading to disorders of swallowing or speech(21).

The diagnosis is done by physical examination, radiological imaging, and pathological examination. Fine needle aspiration cytology (FNAC) can be an easy, rapid, and effective method of diagnosing these myriad of lesions of a specific anatomic space(9). Diagnostic difficulty persists due to their similar mode of presentations and at times morphological overlap. Hence, some cases can only be confirmed by histopathological examination. It is very important to diagnose the nature of tumor whether benign or malignant prior to therapy, because treatment protocol is variable and early diagnosis can give better survival rate.

Material and Methods
The present study was conducted on seven patients mainly presenting with painless mass in the neck. Other symptoms seen included foreign body sensation, dysphagia, hoarseness of voice and impaired hearing. Cytomorphological patterns were evaluated by doing FNAC with 10cc syringes and 22 gauge/24 gauge needle following the standard procedure (11). FNAC was also done under guidance (Computed tomography/ ultrasonography) as and when necessary. The smears were prepared in the usual manner. The wet smears were immediately fixed in isopropyl alcohol and latter stained by Papanicolaou and Hematoxylin& Eosin. Air-dried smears were stained by May-GrunwaldGiemsa. Confirmation was done by histopathology (routine hematoxylin and eosin stain).

Result
Total seven cases of parapharyngeal space tumors were selected of which all were benign. The age ranged from 15-55 years with Male: Female ratio was 1:1. Maran et al. (8) and Pang et al.(12) also reported no sex predominance in their studies. The most common mode of presentation...
was gradually increasing painless mass in neck, the other symptoms being foreign body sensation, dysphagia, hoarseness of voice and impaired hearing (Table I). Radiological investigation revealed parapharyngeal space mass lesions in all the cases. All cases underwent surgery with histopathological examination to confirm the diagnosis. The most common surgical approach was transcervical (5 cases), followed by transparotid and combined transcervical-transparotid approach (1 case each) (Table II).

Out of 7 cases, 5 gave a satisfactory cytological material, in one case of paraganglioma only blood was aspirated, whereas case of angiofibroma cellularity was very scanty to diagnose. Histopathological confirmation of both the lesions was done after cytological detection.

Pleomorphic salivary adenoma (28.6%) showed maximum incidence followed by neurofibroma (14.3%), Schwannoma (14.3%) (Fig.1), Paraganglioma (14.3%), Lipoma (14.3%), angiofibroma (14.3%) (Table III).

Table I: Clinical Features of patients of PPS tumor.

| Clinical Features           | No. of patients |
|----------------------------|-----------------|
| Painless mass in neck      | 04              |
| Dysphagia                  | 01              |
| Hoarseness of voice        | 01              |
| Impaired Hearing           | 01              |
| **Total**                  | **07**          |

Table II: Surgical approaches in PPS Tumors

| Surgical Approach           | Number of Cases |
|-----------------------------|-----------------|
| Trans cervical              | 05              |
| Trans parotid               | 01              |
| Combined Trans cervical- arotid | 01         |
| **Total**                   | **07**          |

Table III: Diagnosis of Parapharyngeal space tumors

| Diagnosis         | Number | Percentage |
|-------------------|--------|------------|
| Pleomorphic adenoma | 02     | 28.6%      |
| Neurofibroma       | 01     | 14.3%      |
| Schwannoma         | 01     | 14.3%      |
| Paraganglioma      | 01     | 14.3%      |
| Lipoma             | 01     | 14.3%      |
| Angiofibroma        | 01     | 14.3%      |
| **Total**          | **07** |            |

Discussion

Tumors of PPS have been of interest to head and neck surgeons because of wide variety of histologic tumors that occur in this space. Parapharyngeal tumors are difficult to diagnose early due to their location and plethora of presentation.

They are usually benign, pleomorphic adenoma arising from the deep lobe of parotid has been found to be the most common tumor of parapharyngeal region by several authors (1) and also by us. Studies have shown that there is no difference in the prognosis of pleomorphic adenoma even if they are cellular and show cytologic atypia in the form of scattered hyperchromatic nuclei (19).

Neurofibroma and Schwannomas are rather common tumors of parapharyngeal space (1). But their occurrence at this site, slow growth and associated neurological manifestations can mimic other entities (16). The paragangliomas occurring in head and neck comprise 3% of all paragangliomas and almost all located in PPS and arise in carotid body (5). Most follow a benign course, may be bilateral, multicentric or a component of multiple endocrine (MEN) syndrome. Histopathological confirmation was done to confirm the diagnosis.

![Fig. 1: Case Diagnosed as Schwannoma A. FNAC Show Spindle Cells](http://www.pacificejournals.com/aabs)

B. Histological Section with palisading (MGG x 400).
Angiofibroma can also arise in the site(6), but we failed to
diagnose them on cytology alone and most of these smears
were grossly hemorrhagic with few spindle cells only.

Cytological diagnosis was almost corroborative with final
histopathological diagnosis in all cases. True positive cases
comprised 5(71.4%), whereas there were only two false
negative cases due to paucity of materials of difficulty in
approaching the lesions. Thus, diagnostic accuracy in this
series was approximately 71.4% which corroborated with
the findings of earlier studies(10).

Parapharyngeal masses sometimes fail to be detected
early due to their location and overlapping symptoms
with other common illnesses. Their important lies in the
fact that even benign lesions, if left untreated, may be
fatal due to encroachment of vital structures. Clinical
examination alone may not be sufficient to diagnose a mass
or parapharyngeal lesion. High resolution CT scan has
facilitated and contributed significantly to the preoperative
assessment of these lesions. It helps in determining the
size and extent of tumor origin, demonstrates the degree
of tumor vascularity, differentiates benign from malignant
lesions and its relation to major vessels(20). This assist in
planning the management of tumor. MRI has also become
a very useful diagnostic tool. With proper clinical and
radiological assessment, FNAC can be extremely useful in
diagnosing most of these lesions except a few which need
histopathological confirmation.

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