Peroral fine needle aspiration cytology of parapharyngeal tumors: a study of 67 cases

D. N. Chatterjee · Asitava Mondal

Abstract

Peroral fine needle aspiration cytology (FNAC) was carried out to diagnose parapharyngeal tumors in 67 patients from January 2000 to January 2008. The inflammatory lesions were excluded in the present study. The age of patients ranged from 6 years to 72 years. Analysis of results showed 35 benign tumors and 32 malignant neoplasms. Correlation with histopathology showed a diagnostic accuracy of 92.5% with no false positive report. No complication was encountered in the present study. FNAC can replace incisional biopsy which may be hazardous in this area. Immediate treatment can be planned based on the FNAC report. Such a large series of parapharyngeal tumors diagnosed by FNAC has hardly been reported in India.

Keywords Peroral fine needle aspiration cytology · Parapharyngeal tumors

Introduction

Parapharyngeal space lesions are of diagnostic challenge to otolaryngologists and head neck surgeons. Various inflammatory lesions and tumors are known to occur in this region [1]. Pre-operative diagnosis of tumors is essential for adequate treatment [2]. Routine radiological investigations are not helpful. A sialogram aided by computerized tomography and carotid angiography can reveal some of the lesions [3]. For almost all lesions, diagnosis is achieved by open biopsy which is not only hazardous but also often yields non-diagnostic material as many lesions are deep seated and covered by normal tissue [4]. Fine needle aspiration cytology (FNAC) has great diagnostic value in parapharyngeal lesions. Sporadic case reports of parapharyngeal tumors have been published but reports of a substantial number of cases are lacking [5]. The present study highlighted the utility of FNAC in the diagnosis of 67 parapharyngeal tumors from January 2000 to January 2008.

Materials and methods

Of 67 patients with parapharyngeal tumors, 51 were male and 16 were female. The patients were in the age group of 6–72 years. The patients had a definite bulge in the lateral pharyngeal wall with an intact mucosa. Hardly any external swelling was visible in any of the patients. Patients having clinical evidence of primary malignancies in tonsils, posterior pharyngeal wall, larynx or pharynx with secondaries in neck extending into the parapharyngeal space were excluded. The inflammatory lesions were excluded from the present study. Previous to FNAC, CT scan was not done in any of the cases. In all the cases FNAC was done by peroral route. Adequate material was obtained in all the cases. No complication was encountered.

The patients were asked to sit relaxed, open the mouth and to breathe orally, keeping the tongue inside. The base of the tongue was depressed with a tongue depressor with

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a light source. As the mass was visualized, aspiration was done with 21-gauge needle, 10–12 cm in length, attached to a 20 ml disposable plastic syringe fitted with a syringe holder (Fig. 1). The needle was moved to and fro in the lesion while suction was maintained in the syringe. The piston was allowed to recoil. The material was spread on glass slides, air-dried and stained by May-Grunwald and Giemsa method. The patients were checked for any bleeding and discharged. The reports were delivered within 24 hours.

Results

Table 1 shows the analysis of the results with cytohistopathologic correlation. Biopsy with histopathological examination was done in all the cases except in metastatic lesions. All the benign tumors were excised. Out of the

Fig. 1 Peroral fine needle aspiration of parapharyngeal tumor (shown by arrow)

18 cases of pleomorphic adenoma diagnosed by FNAC (Fig. 2), histology correlated with 16 cases while 2 cases showed malignant change in pleomorphic adenoma in form of adenocarcinoma. The other benign cases were correctly diagnosed by FNAC. Help of high resolution contrast CT was taken for the diagnosis of chemodectomas. Thus the diagnostic accuracy in categorization of benign lesions by FNAC was 94.3%.

In all cases of malignant tumors, biopsy was done except in metastatic deposits. The primary sites of malignancies were known previously in 6 cases. In 2 cases FNAC helped to locate the primary sites of malignancies. One was metastatic malignant melanoma (Fig. 3) from scalp and the other was metastatic papillary carcinoma from thyroid. The 3 undifferentiated sarcomas proved to be malignant fibrous histiocytoma, pleomorphic liposarcoma and angiosarcoma. The diagnostic accuracy of malignant tumors was 90.3%. The overall diagnostic accuracy was 92.5%. There was no false positive report. The interesting cases diagnosed by FNAC were chordoma (Fig. 4) and meningioma (Fig. 5).

Discussion

The base, posterior wall and lateral walls of the parapharyngeal space are bony. Hence, masses arising within this space enlarge medially and downward toward the pharynx causing a smooth bulge in the lateral pharyngeal wall.

The most common presentation of lesions in the parapharyngeal space is a painless mass and majority of the patients remain asymptomatic. Few complain of foreign body sensation during deglutition. A routine check-up reveals medial bulging of the lateral pharyngeal wall and tonsillar fossa, with downward and medial displacement

Table 1 Cytologic analysis and cytohistopathologic correlation of 67 parapharyngeal tumors diagnosed by FNAC

Cytologic diagnosis	Cytologic diagnosis (number of cases)	Biopsy diagnosis (number of cases)
Benign tumors		
Pleomorphic adenoma	18	16
Benign neural tumor	6	6
Benign lymphoid hyperplasia	4	4
Meningioma	3	3
Lipoma	2	2
Chemodectoma	2	2
Malignant tumors		
Primary		
Adenoid cystic carcinoma	8	8
Non-Hodgkin's lymphoma	5	5
Rhabdomyosarcoma	5	5
Chordoma	3	3
Undifferentiated sarcoma	3	Classified
Metastatic	8	Not done

Fig. 2 Photomicrograph of pleomorphic adenoma showing clumps of epithelial cells merging with myxoid stroma (FNA smear, May – Grunwald and Giemsa stain X400)

Fig. 3 Photomicrograph of metastatic malignant melanoma showing malignant cells with melanin pigments (FNA smear, May-Grunwald and Giemsa stain X400)

Fig. 4 Photomicrograph of chordoma showing polyhedral and physaliferous cells with abundant extracellular myxoid matrix (FNA smear, May-Grunwald and Giemsa stain X400)

Fig. 5 Photomicrograph of meningioma showing tumor cells in whorls with psammoma bodies (FNA smear, May – Grunwald and Giemsa stain X400)

of palate [5]. Associated with it there may be fullness or swelling just below the angle of mandible, limited below by greater cornu of the hyoid bone. Sometimes the patient presents with hearing loss, difficulty in swallowing, sore throat, nasal obstruction, voice changes, Vernet's syndrome, Horner's syndrome, trismus and airway obstruction [2, 6]. Clinical examination reveals an expanded parapharyngeal space but no definite categorization of the lesion is possible [7]. Malignant tumors usually invade the adjacent bones, soft tissue and nerves.

Routine radiological investigations including tomograms and sialograms do not help much. A sialogram combined with computed tomography and carotid angiography may suggest the tumor in some cases [3]. The advanced imaging techniques including magnetic resonance imaging are costly and are out of reach for the common rural people of our country. In spite of these sophisticated investigations, the final diagnosis depends on open biopsy with histologic examination or FNAC. The dangers of incisional biopsy and contamination in salivary gland tumors, neural tumors arising from cranial nerves, sarcomas and vascular tumors of parapharyngeal space are well known [8]. FNAC can help the clinicians be reasonably sure about the nature of the lesion and can take the decision avoiding open biopsy. They can exercise judicious restraint before contemplating surgery and balance the presenting disability against post operative complications from traumatic neural paralysis.

In certain malignant tumors, particularly lymphomas and inoperable tumors, radiotherapy and chemotherapy can be started without surgery. Moreover in inflammatory lesions treatment can be started after culture and sensitivity of the aspirated material.

Recent reports have stressed FNAC of masses of head and neck. However hardly any literature is available on large series of FNAC on parapharyngeal lesions. In our study of 67 tumors in the parapharyngeal space, exact classification of the lesion was possible in 92.5% cases with

no false positive report or complication. The diagnostic accuracy of various head and neck tumors by cytology including FNAC varies from 80–95% by various authors [9–17].

In terms of patient care, the greatest benefit of FNAC derives from the speed with which the correct diagnosis is available, with minimum expenditure and without complications, so that planning for treatment can be started at the earliest.

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