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Fine needle aspiration cytology in parotid lumps

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Abstract

Over a period of two years, Fine Needle Aspiration Cytology (FNAC) was performed on 33 patients presenting with a parotid lump. Five patients were excluded as they were treated medically after FNAC report. The FNAC results of 28 cases were compared with histopathological diagnoses of surgically resected specimens. There were 8 true positive, 17 true negative, 1 false positive and 2 false negative cases. Sensitivity was 80%, specificity 94.4% and diagnostic accuracy 89.3%. FNAC is a simple quick, accurate and virtually complications free investigative modality. It is also helpful adjunct to assess preoperatively the suitability and extent of the surgical treatment (JPMA 47:188,1997).

Introduction

Fine needle aspirationcytology (FNAC) was introduced in 1847[1] but it gained actual popularity and acceptance Iater[2-4]. It is being employed in almost all the superficial and deep organs of the body alongwith its synergistic use with other modalities like Ultrasound, CT scan, MRI and various immunological techniques[5-6]. Since biopsy of parotid gland is contmindicated[7] therefore, FNAC is a suitable investigation for pre-operative evaluation of a parotid lump with added advantages of simplicity[8], rapidity[9] and safety[10]. We report 28 cases who underwent preoperative FNA of parotid masses and the results were compared with histopathology of the resected specimens, to determine its accuracy and define its utility in planning surgery for parotid lumps.

Material and Methods

From July, 1994 to June, 1996, 33 patients underwent FNAC for parotid gland masses. Of these, 28 cases who had resection of parotid gland were included in this study. The remaining 5 patients were treated medically and were excluded from the final analysis. Technique of FNAC described by Fmnzen and Zajicek[11] was followed but we infiltrated 2% Xylocaine at the aspiration site prior to the procedure. A 21-gauge needle was used as advocated by Hartley et al[12]. Alcohol fixed smears were stained with Haematoxylin and Eosin stain for cytological evaluation. The cytologic diagnoses based on FNA smears were compared with the final histopathologic diagnoses of the surgically resected specimens to see the sensitivity and specificity of FNAC.

Results

Of 28 cases, there were 17 males and 11 females with age ranging from 11 to 70 years. The surgical procedure was either superficial parotidectomy (17 cases) or extended parotidectomy (9 total, 2 radical). Of 28 cases aspirated, 8 were reported as malignant and one suspected of malignancy. The histopathology of the operated specimens confirmed these eight cases to be malignant, hence termed True positive (Table I),

Table I. True positive cases.

S.No.	Name	Age	Sex	FNAC Diagnosis	Histopathological diagnosis
1.	N.M	55	M	Mucoepidermoid carcinoma	Mucoepidermoid carcinoma
2.	Z	50	F	Adenoid cystic carcinoma	Adenoid cystic carcinoma
3.	M.Si	35	M	Acinic cell carcinoma	Acinic cell carcinoma
4.	M. Sh	24	M	Adenoid cystic carcinoma	Muco epidermoid carcinoma
5.	M.Y	52	M	Malignant undifferentiated lymphoid tumour	Non-Hodgkin's lymphoma
6.	M.Y	60	M	Mucoepidermoid carcinoma	Mucoepidermoid carcinoma
7.	KHK	70	M	Metastatic Adeno carcinoma	Mucoepidermoid carcinoma
8.	MD	45	M	Squamous cell carcinoma	Mucoepidermoid carcinoma

while one false positive case (Table II)

Table II. False positive and false negative cases.

S. No.	Name	Age	Sex	FNAC diagnosis	Histopathological diagnosis
1.	MN	18	M	Inconclusive; suspected to be mucoepidermoid carcinoma	Pleomorphic adenoma
2.	HA	62	M	Chronic sialadenitis	Acinic cell carcinoma
3.	BY	11	F	No malignancy noted	Muco Epidermoid carcinoma

which was suspected of malignancy on FNAC was finally confirmed to be pleomorphic adenoma. Similarly among all the cases aspirated, 19 were reported as benign. But on final histopathological analysis, 17 cases were confirmed to be benign, hence termed true negative (Table III)

Table III. True negative cases.

S. No.	Name	Age	Sex	FNAC diagnosis	Histopathological diagnosis
1.	HB	60	F	Pleomorphic adenoma	Pleomorphic adenoma
2.	NB	50	F	Pleomorphic adenoma	Pleomorphic adenoma
3.	KB	50	F	Pleomorphic adenoma	Pleomorphic adenoma
4.	FK	11	F	Inconclusive; but without malignancy	Benign Schwannoma
5.	NH	60	M	Warthin's tumour	Warthin's tumour
6.	SB	25	F	Pleomorphic adenoma	Pleomorphic adenoma
7.	AA	38	M	Benign lipoma	Benign lipoma
8.	NB	41	F	Pleomorphic adenoma	Pleomorphic adenoma
9.	NZ	18	F	Pleomorphic adenoma	Pleomorphic adenoma
10.	MM	50	M	Benign cyst	Benign cyst
11.	SB	28	M	Pleomorphic adenoma	Pleomorphic adenoma
12.	RS	35	M	Benign lipoma	Benign lipoma
13.	SAS	22	M	Pleomorphic adenoma	Pleomorphic adenoma
14.	MU	48	M	Pleomorphic adenoma	Pleomorphic adenoma
15.	HM	60	M	Warthin's tumour	Warthin"s tumour
16.	ZB	28	F	Pleomorphic adenoma	Pleomorphic adenoma
17.	Z	30	F	Pleomorphic adenoma	Pleomorphic adenoma

and two cases were false negative (Table IV).

Table IV. Comparison of present study with other series.

	Current study	Weinberger et al 1993[14]	Rodriguez et al 1992[12]	Zurrida et al 1989[13]
Total cases	28	49	64	246
Sensitivity %	80	78.6	85	62
Specificity %	94.4	90.9	97	100
Diagnostic % Accuracy	89.3	87.2	93	87

One of these false negative which was reported as chronic sialademtis on FNAC, finally confirmed to be Acinic cell carcinoma, while the other was devoid of any malignancy on FNAC, was mucoepidermoid carcinoma on histopathology. In our study, sensitivity for malignancy was 80%, specificity to rule Out malignancy was 94.4% and accuracy of differentiation of benign versus malignant tumours was 89.3%. During the follow-up period, which ranged from 8 weeks to 2 years, no immediate or late complications like haematomaforrnation, sepsis, infarction of target lesion, facial nerve injury, spread of tumour cells through needle tract or fistula formation were recorded from parotid lump aspirations.

Discussion

Though comparatively on a small scale, the results of our study are comparable to most studies on parotid masses (Table IV)[13,14]. A lot of work has been done on FNAC of salivary glands taken collectively, but there are few studies which concentrate singularly on the parotid gland. The reason for this might be that, it is not considered to be as accurate as FNAC of thyroid tumours or squamous cell carcinoma of head and neck. Certain fears regarding FNA of parotid gland like facial nerve injuiy or tumour seeding along needle tract also prohibited workers to advance along this path. Another objection on Parotid FNA has been about its utility because whether the outcome is a benign or a malignant tumour, the answer is parotidectomy. Our study found that these fears and objections were not as realistic as they were thought a decade ago. The accuracy of Parotid FNA has beenconsistently above 85% and in the study by Rodreguez et al[13], it has reached upto 93%. The fears of the FNA complications in parotid gland is also not realistic because no complication of aspiration has been encountered in our cases. Similarly, 64 aspiration by Rodriguez et al[13], 49 by Weinbergeretal and 246 by Zurrida et al[14], were also devoid of any major complications. The fear of needle tract implantation, was also found unrealistic in our study because none of our patients (some with followup of more than a year) had any cell implantation through the needle tract. It is thought that this cell implantation through the needle tract, reported in early periods of evolution of FNAC, was largely from the use of large cutting needles (18 gauge) rather than the presently used fine (21-23 gauge) needles[15]. Another objection on FNAC of parotid masses has been that whatever the outcome, the ultimate clinical decision is excision in the form of superficial or total Parotidectomy, In our study it was not entirely so,

because we have found the information gained by FNAC to be helpful in avoiding unnecessary surgical procedure in 5 cases which were managed by medical therapy, three by antituberculous drugs and two by broad spectrum antibiotics. Similarly FNAC is very useful in following benign parotid masses in high risk patients. Preoperative recognition of malignancy allows both the surgeon and the patient to be prepared for an appropriate extensive procedure and allows the surgeonto brief his patientaboutpossible sacrifice of facial nerve and its graft repair, if feasible. Though the consent for the possible facial nerve sacrifice is routine before any surgical procedure on parotid gland, but the reliable knowledge before hand of actual malignancy helps to manage the extent of the surgical procedure with options remaining open. If malignancy is suspected on FNAC, one can anange other means like frozen section facility during operation to save the patient from possible high morbidity. FNAC also allows the patient to settle himself psychologically before extensive surgery alongwith time to discuss different aspects of postoperative mothidity. One feature which we noted in our study to be responsible for failure in diagnoses was the location of the tumour in the deep lobe. Due to this, the aspirating needle probably could not have reached the exact tissue to be aspirated. And since this feature was found responsible quite often in our study, we recommend that if a tumour on clinical examination is suspected to be located in the deep lobe it should be aspirated under ultrasdund guidance wluch will additionally inform about the consistency, location and extension of the mass. In addition, CT scan or MRI may prove to be valuable adjuncts.

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