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Original Research

Evaluation Of Fine Needle Aspiration Cytology For The Diagnosis Of Superficial Soft Tissue Lesions

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ABSTRACT

Background: FNAC has been gaining importance as a result of its cheap cost, easy performance, safety, along with fair specificity and specificity, especially in terms of sorting out malignant cases. Apart from its use in recurrent and metastatic cases, FNAC has been identified as a useful diagnostic technique in the initial diagnosis of STTs. **Aim of the study:** For evaluation of the efficacy of FNAC in diagnosis of superficial soft tissue lesions. **Materials and methods:** The study was conducted in the Department of Pathology of the Medical institute. For the study, we selected patients who were referred to Department of Pathology of diagnosis of superficial soft tissue masses with FNAC. The subjects with lesions in the head and neck region were excluded from the study. A total of 40 patients were selected for the study. For the FNAC procedure, Franzen's type aspiration handle and 20cc syringes were employed for aspiration of the sample from the soft tissue lesions. **Results:** In the present study, we studied a total of 40 cases. The number of benign cases was 29 and the number of malignant cases was 11, malignant fibrous histiocytoma was the most frequent malignant lesion and lipoma was the most frequent benign lesion (n=12). **Conclusion:** FNAC is a highly reliable and cheap alternative to costly diagnostic imaging modalities for initial diagnosis of superficial soft tissue lesions.

Keywords: FNAC, cytology, histology

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INTRODUCTION

In the skin and superficial soft tissue of subcutis, various types of diseases are encountered, ranging from nonspecific dermatoses and inflammatory processes to neoplastic conditions.^{1, 2} Among its various diagnostic aids, lately, FNAC has been gaining importance as a result of its cheap cost, easy performance, safety, along with fair specificity and specificity, especially in terms of sorting out malignant cases. Apart from its use in recurrent and metastatic cases, FNAC has been identified as a useful diagnostic technique in the initial diagnosis of STTs.^{3, 4} Fine needle aspiration cytology (FNAC) has been employed as a useful technique for the initial diagnosis of STT as well for the identification of recurrent and metastatic cases. Grading of STT is viewed as a categorical system which has possible prognostic capabilities.^{5, 6} Hence, the present study was conducted for evaluation of the efficacy of FNAC in diagnosis of superficial soft tissue lesions.

MATERIALS AND METHODS

The study was conducted in the Department of Pathology of the Medical institute. The ethical clearance for the study was obtained from the ethical board of the institute prior to commencement of the study. For the study, we selected patients who were referred to Department of Pathology of diagnosis of superficial soft tissue masses with FNAC. The subjects with lesions in the head and neck region were excluded from the study. A total of 40 patients were selected for the study. For the FNAC procedure, Franzen's type aspiration handle and 20cc syringes were employed for aspiration of the sample from the soft tissue lesions. The diagnosis was confirmed by histopathological examination of the lesions.

The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student's t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistical significant.

RESULTS

In the present study, we studied a total of 40 cases. The obtained FNAC samples were evaluated by cytological and histological studies. Table 1 shows the nature of superficial skin lesions in the study. The number of benign cases was 29 and the number of malignant cases was 11 [Table 1]. Table 2 shows the frequency of malignant lesions; malignant fibrous histiocytoma was the most frequent lesion. [Fig 1] Table 3 shows the frequency of benign lesions, lipoma was the most frequent lesion (n=12). [Fig 2]

Table 1: Nature of superficial skin lesions

Nature of lesion	Number of cases	p-value
Benign	29	0.02
Malignant	11	
Total	40	

Table 2: Frequency of malignant lesions

Malignant lesions	No. of cases	p-value
Malignant Fibrous Histiocytoma	5	0.12
Liposarcoma	4	
Synovial sarcoma	2	

Fig 1: Malignant Lesion

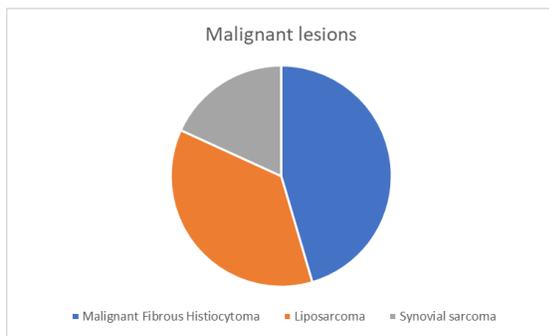
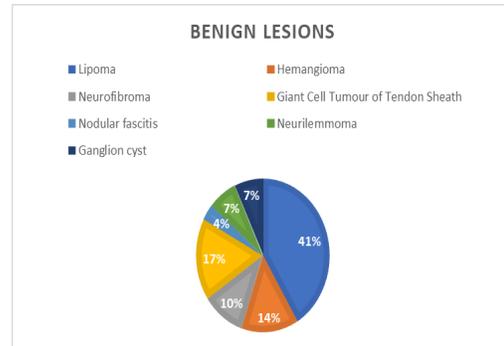


Table 3: Frequency of benign lesions

Benign lesions	No. of cases	p-value
Lipoma	12	0.22
Hemangioma	4	
Neurofibroma	3	

Giant Cell Tumour of Tendon Sheath	5
Nodular fasciitis	1
Neurilemmoma	2
Ganglion cyst	2

Fig 2: Benign Lesions



DISCUSSION

Gupta RK et al evaluated the diagnostic value of fine needle aspiration cytology (FNAC) in the assessment of palpable supraclavicular lymph nodes. The material was analysed in 218 cases with enlarged supraclavicular lymph nodes in which FNAC was performed by the conventional method. In all cases cytological examination was performed on-site after staining the smears by the Papanicolaou method. Eleven cases were diagnosed as inflammatory lesions and 41 cases were unsatisfactory because of scanty/acellular samples (despite two to three repeat samplings). However, in five of these, malignant tumours were later found on biopsy, which was done for persistent enlargement of the supraclavicular lymph node(s). Fifty-three cases were diagnosed as negative for malignancy (normal cellular elements, n=15; reactive elements, n=38) and 12 cases were suspicious of malignancy. In 11 cases a diagnosis of lymphoma was made on histology and in 90 cases metastatic tumours were diagnosed. The overall sensitivity was 92.7%, specificity 98.5%, positive predictive value 97.3% and the negative predictive value was 94.8%. They concluded that FNAC of palpable supraclavicular lymph nodes as a first line of investigation is a cost-effective procedure and is not only useful in the diagnosis of various lesions but can also help in deciding on appropriate management. Nair LK et al evaluated the role of fine needle aspiration cytology (FNAC) in the diagnosis of orbital lesions as a cost-effective diagnostic technique, and to assess its diagnostic efficacy by comparing it with histopathological diagnosis. The study was conducted on 50 patients, over a period of 3 years, who had presented with anterior orbital mass lesions with or without proptosis, and with those having accessible mass lesions. Patients with proptosis without anterior orbital masses, proptosis due to dysthyroid ophthalmopathy, arteriovenous fistulas, hamartomas and choristomas were excluded from the

study. FNAC procedure was done after explaining about the procedure to the patient, and in the presence of an ophthalmologist. Majority of patients belonged to the age group 50-59 years. Male: female ratio was 1.05: 1. The most common lesion on FNAC was non-Hodgkins lymphoma, [13 cases (31.7%)]. 11 (26.8%) cases out of this were confirmed to be non-Hodgkins lymphoma on histopathologic examination. Two cases turned out to be inflammatory pseudotumor. They concluded that FNAC can be done in all palpable orbital mass lesions with minimal risk and complications, with close cooperation between ophthalmologist and pathologist.^{7,8}

Sharma C et al evaluated the cytology-histopathology correlation and to analyze the cause of diagnostic errors with an eventual aim to improve diagnostic accuracy. This is a retrospective study comparing cytology and corresponding histopathology report in 724 thyroid cases. The statistical analysis included false positive rate, false negative rate, sensitivity, specificity, positive predictive value, negative predictive value and accuracy. On cytological examination, 635/724 were reported as benign, 68 malignant and 21 suspicious. On histopathological examination, 626/635 cases were confirmed as benign but there were 9 discordant cases. Among the other cases histopathology diagnosis of malignancy matched in 66/68 and 11/21 cases. Diagnosis correlated in 703/724 cases (97%) [p<0.001]. False positive and false negative rates were 1.9% and 10.5%, respectively. The sensitivity and specificity were 89.5% and 98%, respectively. The positive predictive value was 84.6% and negative predictive value was 98.6%. Accuracy of FNA was 97%. It was concluded that in spite of high accuracy of FNAC in differentiating between a benign and malignant lesion, certain pitfalls should be kept in mind. The common false negative diagnoses were follicular pattern cases which constitute a 'gray zone', cystic papillary thyroid carcinoma (PTC) and papillary microcarcinoma. Zbären P et al evaluated the usefulness and accuracy of fine-needle aspiration cytology (FNAC) in the diagnosis of parotid gland masses. Between January 1990 and December 1998, 410 parotid glands were resected at the Department of Otorhinolaryngology-Head and Neck Surgery at the University of Berne, Inselpital (Berne, Switzerland). Included in the study were 228 cases with preoperative FNAC. In a retrospective study the results of FNAC were analyzed and compared with the corresponding histopathological diagnosis. Histological evaluation revealed 65 malignant tumors and 163 benign lesions. The cytological findings were nondiagnostic in 13 (5.7%), true-negative in 146 (64%), true-positive in 39 (17%), false-negative in 22 (9.8%) and false-positive in 8 (4.5%) cases in detecting malignant tumors. Nineteen of 39 (49%) malignant tumors (true-positive) and 123 of 146 (84%) benign lesions (true-negative) were classified accurately. The accuracy, sensitivity, and specificity were 86%, 64%, and 95% respectively. It was concluded that fine-needle aspiration cytology is a valuable adjunct to preoperative assessment of parotid masses.^{9,10}

CONCLUSION

Within the limitations of the study, this can be concluded that FNAC is a highly reliable and cheap alternative to costly diagnostic imaging modalities for initial diagnosis of superficial soft tissue lesions.

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