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The Spiel of Fine Needle Aspiration Cytology in The diagnosis of metamorphosis and striding of soft tissue tumours-Two year study

Pathology

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ABSTRACT

INTRODUCTION: Fine Needle Aspiration Cytology is well ingrained technique for evaluation of tumors for many years.It has entrenched its place in the diagnostic work up of soft tissue tumors as well. This study professes an assessment of a total of 35 cases of soft tissue tumors by Fine Needle aspiration cytology during a period of two years 2013-2015 and the patients were followed up in accordance for histopathological correlation.Diagnosis and Exemplification of many mass lesions, both superficial and deep-seated, can often be formalized by FNAC.

AIMSAND OBJECTIVES: The aim of this study is to elucidate the role of Fine Needle Aspiration Cytology in diagnosing various types of soft tissue tumors and the sensitivity, specificity, positive and negative predictive values, and overall histological correlation percentage of Fine Needle Aspiration Cytology in diagnosing soft tissue tumors.

MATERIALS AND METHODS: Aspirations were done using a 22-24 gauge disposable needle and a 5cc to 10c.c disposable syringe for suction. Wet-fixed smears with isopropyl alcohol were stained with hematoxylin and eosin. Dry-fixed smears were stained with Leishman Giemsa along with Pap stain were studied for cytological details and diagnosis. The excised surgical specimen and biopsies of the above cases were processed routinely and stained with Hematoxylin and Eosin.

RESULTS: Total of 35 cases were studied from December 2013 to December 2015 . Out of these we received excised specimen and biopsies for 35 cases. 25 were diagnosed as benign soft tissue tumors, while 10 were diagnosed as malignant on cytological examination. The median age of benign soft tissue tumors was 36 years, while that of malignant soft tissue tumors was 50-60 years. Prevalence was highest in the age group of18-45 years, during which majority were benign lesions. Benign Soft tissuetumors were more common in the upper extremities with predominant , while malignant tumors were more common in the lower extremities and trunk. Sex wise distribution showed a male: female ratio of 1.25:1, indicating that they were more common in males. The most common tumors were lipomas, followed by nerve sheath tumors. Allusive analysis was done between the cytology report and histopathology.

CONCLUSION: Final evaluation of the results showed that the diagnostic accuracy of FNAC of soft tissue tumors according to the present study was 95.37%, sensitivity was 81.9% and specificity 95.83%. Thus our study proves the efficacy of FNAC in the diagnosis of soft tissue tumors as a useful cost-effective procedure.

KEYWORDS:

FNAC, Soft tissue tumors, Histopathology.

INTRODUCTION:

Fine needle aspiration cytology (FNAC) forms one of the first diagnostic tools in the evaluation of tumors. It can be used as an alternative to excision biopsy to work up for the case .The aim of the study is to know the accuracy of FNAC diagnosis by compairing with the histopathology diagnosis. FNAC is a relatively non-traumatic and out-patient procedure for sampling both superficial and deep seated masses.[1] Multiple samples can be obtained in the same setting. The technique is relatively painless, produces a speedy result and is inexpensive and cost-effective. FNAC of soft tissue tumors has a important role as pretreatment diagnostic method that relieves patient anxiety by providing and instant diagnosis followed by a discussion of therapeutic options.[2,3] FNAC has a minimal risk of complication such as bleeding,infection and the risk of tumor spread is negligible. Another advantage of FNAC of STT over core needle biopsy is the sampling of material from different parts of large tumors to diagnose tumor heterogenicity.FNAC of STT has few disadvantages. Sometimes it is difficult to diagnose between benign lesions, borderline tumors and low grade sarcomas. In sclerotic and densely collagenised or vascular lesions it yields poor cellularity resulting in difficulty in diagnosis.Final diagnosis of STT by FNAC is based on combined evaluation of clinical data, patientage, site, duration, radiographic and cytological study. And also it requires interaction between pathologist, surgeon and radiologist.

OBSERVATION AND RESULT: 25 cases were diagnosed as benign .The remaining 10 cases were malignant .Majority of benign cases were lipomas .The age incidence of lipoma ranged from 18-45 years with male to female ratio of 5:4 .2 cases of lipoma turned out to be non soft tissue swelling. Site was predominantly upper extremity presented as simple soft swelling without any symptoms .There were 4 cases of neural tumors one of which was parapharangeal extending into the base of the skull,other was over upper extremity which was reported as neurofibroma(fig2) presented with symptoms of pain left ear and swelling in the oral cavity. Two case of Schwannoma(fig1) was reported.Age incidence of neural tumors ranged from 32-50 years .Diagnostic accuracy of benign tumors could not be calculated because histopathology was not done in all cases.There were 10 cases of malignant tumors four female and six males ,mostly in the 5-6th decade ,locations were maximum (3)in the gluteal region reported as sarcoma/spindle cell tumour(fig5) proved to be sarcoma histopathologically (fig6). Four cases in the thigh cytologically reported as lipoma like liposarcomone case of lipoma like liposarcoma (fig3) turned out to be (3)well differentiated liposarcoma, (1)myxoid liposarcoma and (1)undifferentiated liposarcoma,confirmed by histopathology(fig4). similarly 1 cases of atypical lipoma turned out to be pleomorphic liposarcoma,and the other remained as atypical lipoma, so in malignant tumors diagnostic accuracy was 95.8 %(TABLE1,2)

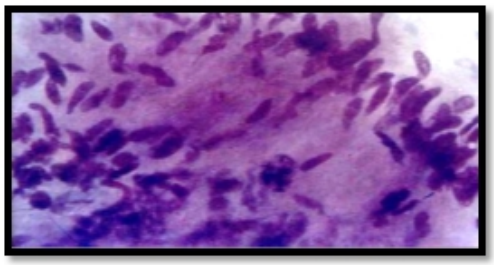
STATISTICS:

Table1:

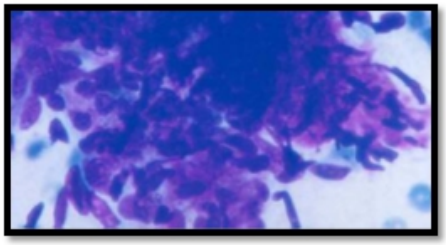
	BENIGN	MALIGNANT	TOTAL
BENIGN	23(True Negative)	02(False Negative)	25
MALIGNANT	01(False positive)	09(True Positive)	10
	24	11	35

Table 2:

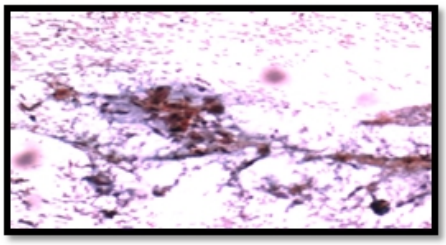
SENSITIVITY	TP/TP+FN	81.9%
SPECIFICITY	TN/TN+FP	95.83
POSITIVE PREDICTIVE VALUE	TP/TP+FN	81.8%
NEGATIVE PREDICTIVE VALUE	TN/TN+FN	92%



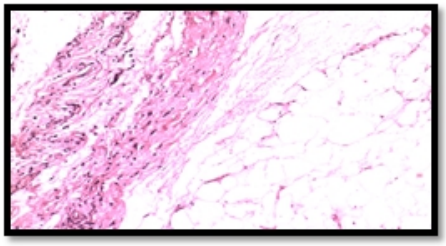
1.SCWANNOMA-Verocay body



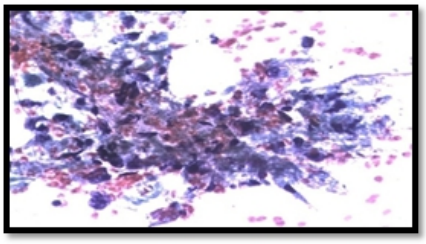
2.NEUROFIBROMA-Buckled Nuclei



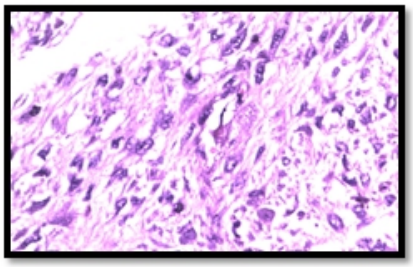
3.FNAC-LIPOMA LIKE LIPOSARCOMA



4.HP-LIPOMA LIKE LIPOSARCOMA



5.FNAC-GLUTEAL SARCOMA



6.GLUTEAL REGION SARCOMA-HP

DISCUSSION:

Fine needle aspiration cytology is proved to be useful and convenient method in diagnosis of soft tissue tumors .It gives fairly accurate diagnosis when combined with clinical findings and radiological findings. The concept of combining Diagnostic cytology and therapeutic surgery for soft tissue sarcoma gained light on assumptions that since open biopsy is ommitted contamination by tumor cells in the wound hematoma is avoided and surgical margins can be left less extensive with minor predictible loss of function..The present study found 95.8% accuracy in cases of malignant tumors.Hence FNAC is a safe ,useful screening test with good diagnostic accuracy when supported by other diagnostic data. The present study, whose aim was to prove the efficacy of FNAC as a useful tool and a reliable technique in diagnosing soft tissue tumors, showed a sensitivity of 81.2%, specificity of 95.83%, positive predictive value of 81.8%, and negative predictive value of 92% that correlated well with other studies. Age-wise distribution of soft tissue tumors showed that the median age for benign soft tissue tumors was 35 years and malignant soft tissue tumors was 40yrs.According to Enzinger[4], malignant soft tumors are most commonly seen in middle aged to elderly people. This correlated well with other studies conducted by Talati et al[5]and Hajdu et al[6] according to whom the median ages were 39.5 and 36.83 years respectively.Sex-wise distribution of soft tissue tumors showed a male: female ratio of 5:4 in benign tumours and 6:4in malignancies. Thus the prevalence of soft tissue tumors was higher in males than females. This correlated with Wakely et al,[7] where in the ratio was 1.5:1.,Campora et al[8] (64.7% males & 35.29% females) and Talati et al (65% males & 35% females).[5]Distribution of the anatomical sites of benign soft tissue tumors presented most commonly in the upper extremities and malignant soft tissue tumors presented most commonly in the trunk,lower extremities that correlated well with other studies conducted by Campora et al[8](1992) and Enzinger[5] (2001). The location of soft tissue sarcoma is of great importance as approximately 2/3[rd] of soft tissue sarcomas have unique site preferences and also it influences the treatment option as per Enzinger[5]

Out of the 35cases, 25 (83.3%) were benign, 10 (16.6%) were malignant tumors. This correlated well with the study conducted by Paraguli S [14] and Bhatia M [15]according to whom the incidence of benign and malignant soft tissue tumors was 61.43% and 38.57% respectively. The most common benign soft tissue tumor was Lipoma. The most common malignant soft tissue tumor was Liposarcoma.

There was difficulty in diagnosing tumors with spindle cell pattern. Problem emanates in distinction between benign tumors with high cellularity like nodular fasciitis and fibromatoses,intermediate grade tumors like dermatofibrosarcoma protruberans, and low grade sarcomas[13] .The criteria for malignancy as described by Kilpatrik SE et al[1]was that an aspirate is designated as a sarcoma when the smear springs up moderate to high cellularity, hyperchromatic nuclei in almost all the sampled cells and ill-defined edges of the neoplastic fragments. Costa MJ et al[10] stated that in any aspirate from a spindle cell lesion, the main criteria to be assessed are cellularity, nuclear pleomorphism, mitosis and necrosis. There were 2 false-negative cases lipomas that proved to be welldifferentiated liposarcoma. Kilpatrict et al,[1]also reported difficulties in the evaluation of lipomatous tumors by FNAC.Exposition of results showed that the diagnostic accuracy of FNAC of soft tissue tumors as per the present study was 95.83% which correlated well with other studies The present study, whose aim was to elucidate the efficacy of FNAC as a useful tool and areliable technique in diagnosing soft tissue tumors, showed a sensitivity of 81.9%, specificity of95.83%, positive predictive value of 81.8%, and negative predictive value of 92% that correlated well with other studies.(Table1,2)

Conclusion: FNAC of Soft tissue tumours has important limitations. Samples may be limited in cellularity as a result insufficient for a diagnosis. There are certain neoplasms in which a benign versus

malignant differentiation cannot be made with certainty from FNAC and it may be impossible to predict the grade on the basis of the cytology smears especially with spindle cell neoplasms. Based on purely on cytomorphology, the exact cell type of many STT cannot be stated accurately. However these problems are overcome by the use of ancillary diagnostic procedure on aspirated cellular material.

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