



RESEARCH ARTICLE

EVALUATION OF FINE NEEDLE ASPIRATION CYTOLOGY AND ITS CORRELATION WITH HISTOPATHOLOGICAL FINDINGS IN SOFT TISSUE TUMORS

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ABSTRACT

A total of 100 cases of soft tissue tumor was studied by fine needle aspiration cytology and was compared by histopathological examination. In this, 60 cases were benign, 33 were malignant and 7 cases were inconclusive on FNAC. On histopathological and IHC study the accuracy rate of benign tumors were 91.1% and of malignant 90.8%. The overall accuracy rate was 89.8%. So FNAC is considered as a useful, cost effective procedure for primary diagnosis and recurrent tumors and should be used as a primary complementary method.

Key words:

Fine needle aspiration cytology,
Histopathological, Benign,
Malignant, Accuracy rate.

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INTRODUCTION

Soft tissue tumors are mesenchymal proliferation that occur in the extra-skeletal, non-epithelial tissues of the body excluding viscera, brain covering and reticulo-endothelial system. Embryologically it is derived from mesoderm. Some contribution from neuro-ectoderm. STT are highly heterogeneous group of tumors and classified on histogenetic bases according to the adult tissue they resemble, with confirmation by specific immunohistochemistry markers. In general the rate of benign to malignant STT is about 10:1 and higher. The use of FNAC as primary evaluation of STT is still debated. It is mainly used for evaluation of metastatic or local recurrences of STT. Histopathological diagnosis with the help of IHC is the gold standard time honoured approach but complication like haematoma tumor cell spillage, infection can occur. However, FNAC offers several advantages.

- 1) It is minimally invasive and cost effective technique.
- 2) It can provide predictive diagnosis of benign or malignant neoplasm.
- 3) In cases of benign neoplasm, surgery can be avoided in elderly and poor risk patients.

- 4) In case of recurrent/ metastatic diseases cytological diagnosis allow administration of palliative treatment directly.

Aims and Objective

To compare the cytological diagnosis with histopathological diagnosis for computing the diagnostic accuracy of FNAC procedure in primary diagnosis of suspected soft tissue tumor.

MATERIALS AND METHODS

The study was conducted during May 2015 to April 2016, including 100 patients attending surgical OPD from in and around NMCH and were subjected to FNAC in pathology department at NMCH. Aspiration was carried out using 22 gauge needle with 10cc disposable syringe, 9cm long 22 gauge needle was used for deep seated lesions. Neither LA nor any premedication was used. In all cases aspiration was done by experienced by cytopathologist and the slides were stained by MGG (May-Grunwald-Giemsa) and PAP (Papanicolaou) stain. Histopathological examination was done in all cases and few cases were also subjected to immunohistochemistry for typing. For histopathological examination formalin fixed tissue was

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grossly examined and proper section and margins taken and the tissue was processed by fully automated machine, MICROM STP 120. IHC was done by immunoperoxidase method.

Observation

In total of 100 cases in the study 60 cases were benign soft tissue tumor. 33 were malignant, 7 were inconclusive.

Age distribution of benign soft tissue tumors as diagnosis by FNAC:

Age distribution of benign soft tissue tumors as diagnosed by FNAC

| Final diagnosis | 0-10 yrs | 11-20 yrs | 21-40 yrs | >40 yrs | No. of cases |
|------------------|----------|-----------|-----------|-----------|--------------|
| BENIGN | | | | | |
| Lipoma | Nil | Nil | 5(19.6%) | 18 | 23 |
| Neurofibroma | Nil | Nil | 2(11.2%) | 15(87.2%) | 17 |
| | 3(20%) | 1(20%) | 1(20%) | Nil | 5 |
| | 3(20%) | 4(26.2%) | 3(20%) | 5(33.3%) | 15 |
| Total | | | | | 60 |
| MALIGNANT | | | | | |
| RMS | 3(50%) | 2(33.3%) | 1 | Nil | 6 |
| Fibrosarcoma | Nil | 1(20%) | 3(60%) | 1(20%) | 5 |
| MFH | Nil | 1(20%) | 2(40%) | 2(40%) | 5 |
| RCT | 2(50%) | 1(25%) | 1(25%) | 2(50%) | 6 |
| Leposarcoma | Nil | Nil | 1(50%) | 1(50%) | 2 |
| Malignant | 2(22.2%) | 2(22.2%) | 3(33.3%) | 2(22.2%) | 9 |
| Mesenchymal | | | | | |
| Total | | | | | 33 |

Sex and anatomical distribution of different soft tissue tumor of FNAC

| STT | No. of cases | Sex (M/F) | Head & Neck | Trunk | Superior extremity | Inferior extremity |
|--------------|--------------|-----------|-------------|-------|--------------------|--------------------|
| Benign | 60 | 40/20 | 17 | 20 | 14 | 9 |
| Malignant | 33 | 20/13 | 5 | 13 | 4 | 11 |
| Inconclusive | 7 | 4/3 | 2 | 4 | 1 | - |

Comparitive analysis of FNAC and histological IHC diagnosis

| Concordance between FNAC and Histopathology | | | Discordance in FNAC and Histopathology | | | |
|---------------------------------------------|--------------------------------|------|----------------------------------------|----|---------------------------------|---|
| Nature | Diagnosis | | FNAC | | H/P diagnosis | |
| BENIGN | Lipoma | 3/23 | Lipoma | 3 | Nodular fasciitis | 1 |
| | Neurofibroma | 2/17 | | | Well-differentiated liposarcoma | 2 |
| | Haemangioma | 1/5 | Neurofibroma | 2 | Schwannoma | 2 |
| | | | Haemangioma | 1 | Pericytoma | 1 |
| | | | Benign mesenchymal lesion | 15 | Dermatofibroma | 5 |
| | | | | | Fibrous histiocytoma | 4 |
| | | | | | Schwannoma | 2 |
| | | | | | Haemangioma | 1 |
| | | | | | Nodular fasciitis | 3 |
| MALIGNANT | Rhabdomyosarcoma | 1/6 | Rhabdomyosarcoma | 1 | MFH | 1 |
| | Fibrosarcoma | 1/5 | Fibrosarcoma | 2 | LMS | 1 |
| | Small round cell tumor | 0/6 | | | Liposarcoma | 1 |
| | Liposarcoma | 0/2 | Malignant mesenchymal lesion | 9 | MPNST | 4 |
| | Malignant fibrous histiocytoma | 1/5 | | | Angiosarcoma | 4 |
| | | | | | Epithelial sarcoma | 1 |
| | | | Inconclusive | 7 | Haemangioma | 3 |
| | | | | | Nodular fasciitis | 2 |
| | | | | | Pleomorphic sarcoma | 2 |

Age and Sex distribution

- 1) It was observed that Benign tumor were relatively common above 3rd decade while sarcoma occurs at all ages.
- 2) Male patients outnumbered the female.
- 3) Malignant tumor has predilection for trunk and inferior extremity.

After cytological diagnosis, every case was followed by histopathological examination with IHC in inconclusive cases. A comparative analysis of cases diagnosed by FNAC and histopathological + IHC examination was done.

Comparative analysis of FNAC and histological IHC diagnosis

DISCUSSION

Only a few series of large no. of patients have addressed diagnostic accuracy of FNAB of soft tissue. Akerman and William have described the largest series over a period of 20 yrs and evaluated 517 patients on aspiration out of tissue 315 were benign and 202 were malignant. The author was able to distinguish benign from malignant 94% of patients. The error were equally divided between false positive and false negative diagnosis. As is the experience for many individuals. The area of given difficulty was spindle cell neoplasm followed by lipomatoustumor. Brasjo et al – evaluated 342 patients. The cytological diagnosis was conclusive in 300 patients (88%). There was a 5% false negative rate among 153 benign cytological cases and 2 % false negative among 147 malignant cases. In our study out of 100 cases studied by FNAC, 7 cases were inconclusive (7%) 60 (60%) were found to be benign and 33 (33%) were malignant. Out of 7 cases 5 were benign and 2 were malignant on histopathological examination. The probable cases could be exclusive fibrosis or necrosis. Out of 60 benign soft tissue tumor diagnosed on FNAC 15 were diagnosed as benign mesenchymal tumor and could not be specified. On histopathological examination, 5 cases were found to be dermatofibroma, 3 benign fibrous histocytoma, 3

schwannoma haemangioma, 33 cases were diagnosed as malignant soft tissue tumor on FNAC.

Conclusion

From the above observation we conclude that FNAC evaluation of soft tissue tumors is a useful procedure, quite safe, cost effective and accuracy rate of our study is at par with available alternative. If possible, this technique must be complemented by biopsy for proper correlation of histocytological features.

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