

CYTOPATHOLOGICAL STUDY OF SOFT TISSUE NODULES: EXPERIENCE FROM A TERTIARY CENTRE IN SOUTH INDIA.

Pathology

Rajeswari Golajapu	MD Assistant professor, Dept of Pathology, Guntur Medical College , Guntur, Andhra Pradesh, India
Kaumudi Konkay*	MD DNB Assistant professor, Dept of Pathology, Guntur Medical College , Guntur, Andhra Pradesh, India *Corresponding Author
Padmavathi Devi Chaganti	MD Professor and Head, Dept of Pathology, Guntur Medical College , Guntur, Andhra Pradesh, India
Yalagala Mahesh babu	MBBS Post graduate, Dept of Pathology, Guntur Medical College , Guntur, Andhra Pradesh, India

ABSTRACT

INTRODUCTION: FNAC is an important diagnostic tool in initial evaluation of soft tissue masses.

AIM: to evaluate the FNAC smears of soft tissue nodules during the study period.

MATERIALS AND METHODS: The FNAC smears of soft tissue lesions at our institute during one-year period between June 2019 and July 2018 were reviewed.

RESULTS: there were totally 162 cases, of which nondiagnostic were 4 (2.4%), Non neoplastic were 42(25.9%), Abscess - 22(13.6%), Ganglion cyst- 20 (12.4%), Epidermoid cyst- 29 (17.9%). Neoplasms of epithelial origin were, benign skin adnexal tumor - 1(0.6%), metastatic deposits- 6 (3.7%). Neoplasms of mesenchymal origin were, spindle cell tumor- 26(16.4%), round cell tumor- 3(1.8%), Pleomorphic tumor- 1(0.6%) epithelioid/polygonal cell type- myxoid 2(1.2%), lipomatous type - 41(25.4%), tenosynovial giant cell tumor- 6(3.7%)

CONCLUSION: Our study enumerates the cytopathology of soft tissue lumps.

KEYWORDS

cytopathology, soft tissue tumors

INTRODUCTION:

Fine needle aspiration cytology (FNAC) plays an important role in the diagnosis of soft tissue lesions. FNAC is fairly cost effective, quick, and easy to perform procedure, especially of the palpable soft tissue masses, hence it has become an important diagnostic tool in initial evaluation of soft tissue masses [1,2].

AIM:

The study was done with an aim to evaluate the FNAC smears of all the cases who presented with soft tissue nodules during the study period. The lesions were further stratified based on aetiology; in addition, cyto-histological concordance was evaluated in case where histopathology was available.

MATERIALS AND METHODS:

All FNACs of soft tissue lesions done at our institute during the period of one year (between June 2019 to July 2018) were retrieved by retrospective search of pathology records. The patient information, clinical and radiological details were obtained from the pathology requisition form and patient hospital records. The cytology smears and their corresponding histopathological features were reviewed whenever available. Haematoxylin and eosin (H&E) stain was done for alcohol fixed smears and Leishman stain was done for air dried smears. Special stains were done wherever necessary.

All the cytology slides were reviewed and further grouped into following categories- inadequate, infective/inflammatory (non-neoplastic), and neoplastic. Neoplastic lesions were further typed 6 cytomorphological categories, namely spindle cell, round cell, pleomorphic, myxoid, epithelioid/polygonal cell and lipomatous type. [3]

Statistical analysis:

a descriptive analysis was done using frequencies and percentages.

RESULTS:

A total of 162 cases were included in the study after excluding lymphnode deposits presenting as soft tissue masses. The age range was wide ranging from as young as 20 days neonate to 76 years old, with a mean age of 42 years. There was male predominance with 59 females and 103 males, with male: female ratio (M: F) of 1.7 :1. The frequency, age range, and duration of various lesions are shown in table 1.

Table1: table showing frequency, age range and duration of various cytological diagnostic categories

Cytology diagnosis	Number of cases (percentage)	Age range	Duration of lesion
Blood cellular elements/ nondiagnostic	4 (2.4%)	-	-
Non neoplastic	42(25.9%)		
Abscess	22(13.6%)	3yr to 75yr	1m to 2yr
Ganglion cyst	20 (12.4%)	13yr to 70 yr	1m to 2yr
Epidermoid cyst	29 (17.9%)	6 – 65yr	3m to 14 yr
Neoplasms of epithelial origin			
Benign			
Skin adnexal tumor	1(0.6%)		
Malignant			
Metastatic deposits	6 (3.7%)	47 to 76 yr	1 m to 3m
Neoplasms of mesenchymal origin			
spindle cell tumor	26(16.4%)	20days-67yr	20days to 10yr
round cell tumor	3(1.8%)	14 to 27 yr	
Pleomorphic tumor	1(0.6%)		
epithelioid/polygonal cell type	-		
myxoid	2(1.2%)	32 to 35 yr	2m
lipomatous type	41(25.4%)	23yr – 53 yr	10days to 20yr
tenosynovialgiant cell tumor	6(3.7%)		

Of 162 cases, four cases were inadequate and yielded blood cellular elements on repeated aspirations. There were 71 cases of infective or inflammatory pathology (abscess – 22, ganglion cyst – 20). The common location for abscess was extremities- foot, dorsum and forearm. The common location for ganglion was wrist -8 cases, followed by foot, dorsum and fingers.

Epidermoid cyst was diagnosed in 29 cases, M: F was 1.9:1(males-19; females- 10)the duration ranged from 3 months to 14 years. Secondary infection or granulomatous reaction was seen in 10 cases.

Adipocytic lesions or lipomas accounted for 41 cases, of which one

case was diagnosed as fibrolipoma on cytology and subsequently confirmed histo-pathologically. The common locations were extremities -16 cases, followed by back – 10 cases. M: F was 1.05:1 (males-21; females-20).

Round cell tumors (figure 1C and 1D) constituted 3 cases, M:F was 1:2. The location was right iliac fossa in two cases and right thigh in one case.

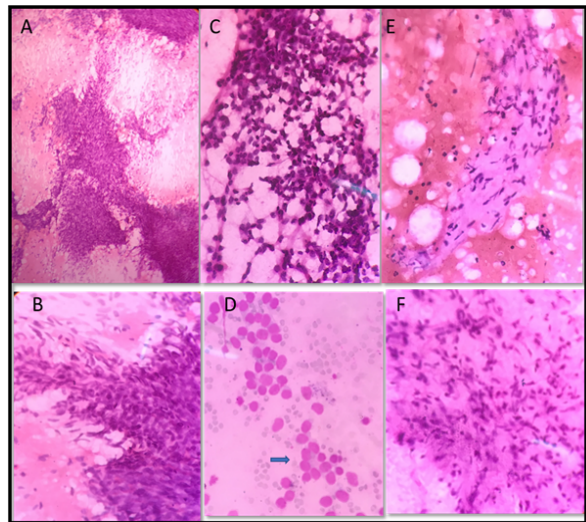


Fig 1: H & E, A) 400X B) 400X, Malignant spindle cell tumor C) H&E 100X D) 400X, Leishman stain, Malignant small round cell tumor, arrow showing rosettes E) H & E 400X Benign spindle cell tumor F) 100X, Myxoid tumor

Spindle cell lesions constituted 26 cases with age range between 20 days to 67 years, and mean age of 38 years; the most common age at presentation was in fifth decade of life. The common location is lower limbs- 14 cases, followed by upper limb – 4 cases and trunk- 4 cases. Of these 25 cases, in all cases except one, the diagnosis was benign spindle lesion (figure 1E); the possibilities entertained were benign nerve sheath tumors - neurofibroma and schwannoma in most cases. In one case (figure 1A and 1B), malignancy was suspected, and a possibility of synovial sarcoma was considered, which was confirmed subsequent on histopathologically of excision biopsy. The M:F ratio was 1.6: 1 (16 males, 10 females). Histopathological correlation was available for 6 cases reported as benign spindle cell neoplasms, of which 4 cases correlated with histology (3 cases- reported as neurofibroma, one case as schwannoma), one case turned out to be malignant – synovial sarcoma and one case turned out to be non-neoplastic spindle shaped fibroblastic proliferation with foreign body giant cell reaction. The sensitivity, specificity, positive predictive value and negative predictive value for spindle cell neoplasms are each 80%. However, the numbers are too small to draw any conclusions.

There were six cases of tenosynovial giant cell tumor, M:F was 2: 1 (4 males, 2 females); the common locations were fingers (4 cases).

There were two cases of myxoid tumor (figure 1F), both were females in their third decade. Location was right lumbar region and left upper limb. The right lumbar region was confirmed histologically as angiomyxoma.

There was one case of benign skin adnexal tumor of scalp which was clinically suspected as lipoma.

There were six cases, 3.7% of metastatic deposits who presented with soft tissue swelling; M: F was 2: 1 (4 males, 2 females). The locations were scalp in two cases, forearm, leg, chest and anterior abdominal wall in one case each. Three were adenocarcinoma deposits and three were squamous cell carcinoma deposits. One case was a known case of carcinoma colon who underwent surgery previously. Histopathology was available in 2 cases, which correlated with cytology in both cases; one case was squamous cell carcinoma of scalp and other case was papillary adenocarcinoma deposit in left leg.

Children with age below 16 years constituted 16 cases, of which there were 7 epidermoid cysts, ganglion cyst 2, abscess 1, inadequate 1, blue

round cell tumor -2, spindle cell lesion 4 cases.

DISCUSSION

The FNAC smears may not always show typical features of a specific lesion, so a precise diagnosis may not be possible like histopathology, however it helps in differentiating benign from malignant lesion. (4) Hence FNAC plays a pivotal role in the initial evaluation of soft tissue lesions and planning further management.

We evaluated a total of 162 cases who presented with soft tissue swelling. Adequate material was obtained in majority of the cases (97.5%) cases; Nagira et al have studied 301 samples and found adequate material in 279, 93%. (5)

Neoplastic lesions constituted 53.4%, and non-neoplastic lesions constituted 42.1%. Arco et al have reported similar observations where most lesions were inflammatory lesions or benign soft tissue tumors. (6)

In our study, Epidermoid cyst (40.8%, 29 out of 71) was the most common non-neoplastic lesion encountered followed by abscess (30.9%, 22 out of 71) and ganglion cyst (28.1%, 20 out of 71).

Amongst the benign mesenchymal neoplasms, lipoma or adipocytic lesion was the commonest, 51.8% (41 out of 79), followed by spindle cell lesions which constituted 32.9% (26 out of 79 cases of mesenchymal neoplasms). Bennert et al made similar observations in their study of 117 cases, where lipomas constituted 69% of cases. (7)

Malignant lesions in our lesions in our study constituted 6.8% (including metastatic deposits) and malignant mesenchymal lesions constituted only 3.1% (5 out of 162), which is in very low incidence when compared to other studies. (8,9,10). Malignancy rates in various studies ranged between 16 to 17%. (8,9,10) Rekhi et al (2) have reported malignancy rates as high as 84.25%. The contrasting lower incidence of malignancy in our study might be because that ours is a General hospital and most common cases referred are for preliminary evaluation of lumps encountered in surgical clinic, as compared to other studies which are oncology referral centres. The incidence seen in our study is more in line with incidence seen in general population with a lower hospital-based selection bias. Malignancy seen in our study were 3 cases of round cell tumor, one case of spindle cell tumor which turned out to be synovial sarcoma on histopathology and one case of pleomorphic sarcoma.

Our results are comparable to that of Nagira et al (5) study; they have studied 301 cases, of which small round cell tumors- 14 cases (4.65%), spindle cell tumors- 77 cases (25.5%), epithelioid/polygonal 16 cases (5.31%), pleomorphic tumors - 29 cases (9.63%), myxoid tumors 19 cases (6.31%), lipomatous 37 cases (12.29%), epithelial tumors - 23 cases (7.64%), inflammatory lesions - 8 cases (9.30%), and others - 36 cases (11.96%).

CONCLUSION

Our study enumerates the cytopathology of soft tissue lumps of patients referred from surgical outpatient department.

Apart from mesenchymal lesions, inflammatory lesions and epidermoid inclusion cysts commonly present as soft tissue swellings.

Lipomas, epidermoid cysts and ganglion cysts are common causes of soft tissue swelling in adults. After lipomas, spindle cell lesions are the commonly encountered mesenchymal lesions

Epidermoid cysts and mesenchymal neoplasms are the common cause of soft tissue swelling in children. Spindle cell lesions are commonest mesenchymal neoplasms in children. Malignancy rates are higher in children than in adults (12.5% as compared to 6.8%)

REFERENCES:

- 1) Ogun GO. Fine needle Aspiration Biopsy (FNAB) in the initial evaluation and diagnosis of palpable soft tissue lesions and with histologic correlation. Pan Afr Med J. 2015;20:44. Published 2015 Jan 15. doi:10.11604/pamj.2015.20.44.4271
- 2) Rekhi B, Gorad BD, Kakade AC, Chinoy R F. Scope of FNAC in the diagnosis of soft tissue tumors-A study from a tertiary cancer referral center in India. CytoJournal [serial online] 2007 [cited 2019 Jul 20];4:20. Available from: <http://www.cytojournal.com/text.asp?2007/4/1/20/41205>
- 3) Kilpatrick SE, Geisinger KR: Soft tissue sarcomas: the utility and limitation of fine needle aspiration biopsy. Am J Clin Pathol 1998; 110: 50-68
- 4) Iyer VK. Cytology of soft tissue tumors: Benign soft tissue tumors including reactive, nonneoplastic lesions. J Cytol [serial online] 2008 [cited 2019 Jul 21];25:81-6. Available from: <http://www.jcytol.org/text.asp?2008/25/3/81/44034>

- 5) Nagira K., Yamamoto T., Akisue T. Reliability of fine-needle aspiration biopsy in the initial diagnosis of soft-tissue lesions. *Diagn Cytopathol.* 2002;27:354–361.
- 6) Diaz Del Arco C, Ortega Medina L, Fernández Aceñero MJ. The role of fine-needle aspiration cytology in the diagnosis of soft tissue nodules: Experience in a tertiary center. *Rev Esp Patol.* 2019 Jul - Sep;52(3):147-153. doi: 10.1016/j.patol.2018.10.005. Epub 2018 Dec 24.
- 7) Bennert KW, Abdul Karim FW. Fine needle aspiration vs. core needle biopsy of soft tissue tumors. A comparison. *Acta Cytol* 1994;38:381-499.
- 8) Shaham Beg, Shaista M Vasanwala, Nazima Haider. A comparison of cytological and histopathological findings and role of immunostains in the diagnosis of soft tissue tumors *J Cyto* 2012; 29(2):125-130.
- 9) Bezabih M. Cytological diagnosis of soft tissue tumors. *Pathology* 2007; 28: 368-76.
- 10) Dey P, Mallik MK, Gupta SK, Vashishta R K. Role of fine needle cytology in the diagnosis of soft tissue tumors and tumor like lesions. *Diagn Cytopathol* 1996; 15:23-32.