

Role of FNAC in the Diagnosis of Skin and Subcutaneous Lesions: A 3 Years Prospective Study

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ABSTRACT

Skin is the largest organ of the body consisting of epidermis and dermis. Skin and superficial subcutaneous soft tissues present with a wide array of lesions ranging from nonspecific dermatoses and inflammatory lesions to frank neoplasms. FNAC is suitable for palpable skin and subcutaneous lesions due to easy accessibility and adequate material yield. Certain subcutaneous and nodular skin lesions very often come to cytology lab for quick evaluation and opinion on being benign or malignant. In our study we evaluate various skin and subcutaneous lesions that was send to our department for FNAC.

Keywords: FNAC, Cutaneous, Subcutaneous.


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INTRODUCTION

FNAC is a simple, cost effective technique with universal acceptance as it is time saving and provides quicker and accurate results, so it is regarded at present as a useful diagnostic aid.¹ Previously FNAC was mostly used for surgical entities like the palpable breast lesions and Head and Neck lesions, but now the scope of FNAC has been extended to different skin and subcutaneous conditions as it minimises the incidence of wide surgical excisions and biopsy. Although biopsy still is considered confirmatory for majority of the suspicious lesions and is considered a valuable diagnostic tool, FNAC on other hand is a cost effective, time saving and a rapid diagnostic procedure that provides nearly accurate diagnosis in ruling out the benign and malignant lesions. In a way it helps the clinicians to plan accordingly the treatment strategy for better care and management of the patients.² This prospective study evaluates cytomorphological findings in different skin and subcutaneous lesions at our institute for a period of three years.

MATERIALS AND METHODS

In the present study a total number of 712 patients were cytologically evaluated who presented with various skin and subcutaneous lesions during the time period from September 2017 to June 2019, in the department of Pathology, MKCG Medical College and Hospital. It was a prospective study design. In all the cases a detailed clinical history along with relevant radiological, biochemical and haematological data was noted.

FNAC and scrape cytology were taken according to the need of the lesion. Under all aseptic conditions FNAC was done using 24 & 22 gauge needle with 5ml or 10 ml dispovan syringes. Scrape cytoscsmears obtained after cleaning the lesion in sterilised gauze, soaked with normal saline. Tool for scarpe was either edge of metallic spatula or cytobrush.

Two kind of smears both air dried and alcohol fixed were routinely stained with MGG, H&E, and papaincolau method. Ziehl Nelson stain was used whenever necessary.

RESULTS

Out of 712 cases evaluated 416 cases were male (58.2 %) and 296 (41.5 %) were female with male: female ratio being 1.40:1. The youngest patient was that of a new born infant that presented with Fat necrosis and the oldest was a 80 year old male who presented with Epidermal inclusion cyst. There were 340 (47.75%) Non neoplastic lesions and 372 (52.24%) neoplastic lesions.

Out of 372 neoplastic lesions 268 (72.04%) were benign and 104 cases were malignant (27.95%). Most common non neoplastic lesion in our study was Epidermal Inclusion Cyst [170 cases-50%]. The second most common lesion was ganglion cyst[100 cases-29.4%] followed by suppurative lesion in the 3rd place[60 cases-17.6%]. Fungal granulomas and cutaneous rhinosporidiosis + filariasis comprised each 5 cases [i.e 1.47%].

Lipomas were the most common lesions [150 cases-55.9%] amongst benign neoplastic lesions, followed by benign spindle cell

lesions [50 cases-18.6%] and then the benign adnexal lesions [68 cases -25.3%].

Under benign spindle cell lesions neurofibroma and neurilemmoma constituted majority of the lesions. Few of the benign adnexal lesions included in our study were Trichilemmal cyst, Sebaceous hyperplasia, Pilomatricoma and Chondroid syringoma. There were 104 malignant cases in our study. Commonest malignant tumour in our study was squamous cell

carcinomas (81.7%), followed by malignant melanoma (4.80%) and basal cell carcinoma (5.76%). In malignant neoplasm category, 3 cases were adenocarcinomatous cutaneous metastatic deposit with unknown primary and another case was metastatic cutaneous deposits to shoulder with primary in the thyroid (follicular lesion), followed by case of cutaneous metastatic melanoma and 4 cases of malignant soft tissue lesions were also noted in our study.

Table 1: Showing Age & Sex distribution of cutaneous lesions.

S no.	Sex	No. of cases	0-20 yrs	21-40 yrs	41-60 yrs	>60
1	Male	416	56	124	172	64
2	Female	296	46	116	64	70
3	Total	712	102	240	236	134

Table 2: Showing distribution of cases in Non-neoplastic lesions.

Type	No. of Cases	percentage
Epidermal Inclusion Cyst	170	50%
Ganglion cyst	100	29.4%
Suppurative lesion	60	17.6%
Fungal Granulomas	05	1.47%
Fungal inf (Rhinosporidiosis) & Filariasis	05	1.47%
Total	340	100%

Table 3: Cytological features of few Non-neoplastic lesions.

S no.	Non neoplastic lesion	Cytological features:-
1.	Epidermal Inclusion Cyst	Plenty of anucleate squames on a dirty background.
2.	Ganglion Cyst	Scattered Mononuclear synovialocytes on a myxoid background.
3.	Suppurative lesion	Plenty of polymorphs, degenerated cells, histiocytes, over necrotic tissue debris background.
4.	Fungal Granuloma	Fungal hyphal forms, giant cells, eosinophils.
5.	Cutaneous Rhinosporidiosis	Plenty of sporangia in different stages .
6.	Cutaneous Filariasis	Filarial worms, inflammatory debris, fluid background.

Table 4: Showing Distribution of cases in Benign Neoplasms.

Type of Benign Neoplasms	Number of cases	Percentage (%)
Lipoma	150	55.9%
Benign Spindle cell Tumours	50	18.6%
Benign Adnexal lesions	68	25.3%
Total	268	100%

Table 5: Cytological features of few benign neoplasms

S no.	Benign Neoplasms	Cytological Features
1.	Lipoma	Shows mature adipocytes on a fatty background.
2.	Neurofibroma	Few dispersed benign spindle cells, matrix background.
3.	Schwannoma	Cellular smear, spindle cells, elongated fish hook like nuclei to wavy, fibrillary material in background.
4.	Benign adnexal tumor	Shows cluster of dissociated small basaloid cells
5.	Pilomatricoma	Ghost cells, basaloid cells and calcification
6.	Trichilemmal cyst	Plaques of keratinous material with focal collection of cholesterol crystals. No cells seen.
7.	Chondroid syringoma	Plasmacytoid cells in chondromyxoid background.
8.	Giant cell tumor tendon sheath.	Multinucleated giant cells admixed with stromal cells.

Table 6: Showing Distribution of cases in Malignant Neoplasms.

Type of Malignant Neoplasms.	No. of cases	Percentage (%)
Squamous cell carcinoma	85	81.7%
Malignant Melanoma	05	4.80%
Basal cell carcinoma	06	5.76%
Adenocarcinomatous deposits/ (Metastatic)	04	3.84%
Malignant soft tissue lesions	04	3.84%
TOTAL	104	100%

Table 7: Cytological features of Malignant lesions.

S no.	Malignant lesions	Cytological features of Malignant lesions.
1.	Squamous cell carcinoma	Pleomorphic squamous malignant cells in sheets and singly.
2.	Basalcell carcinoma	Basaloid cells showing peripheral palisading, hyperchromatic nuclei, scanty cytoplasm and fibrous stroma.
3.	Malignant melanoma	Highly cellular pleomorphic cells, high N:C ratio, prominent eosinophilic nuclei.
4.	Pleomorphic sarcoma	Pleomorphic cells, hyperchromatic nuclei, many binucleated and multinucleated cells.
5.	Myxoid liposarcoma	Myxoid matrix harbouring branching capillary vessels with occasional lipoblasts (multivacuolated scalloped nuclei).
6.	Metastatic adenocarcinomatous deposits(unknown primary)	Glandular pattern, prominent nucleoli, mucin background.
7.	Metastasis of follicular carcinoma thyroid	Microfollicles repetitive pattern, scanty absent colloid.
8.	Metastatic deposits of cutaneous melanoma	Large pleomorphic cells, prominent nucleoli, cytoplasm containing melanin pigments.

NON NEOPLASTIC LESION (Fig 1-6)

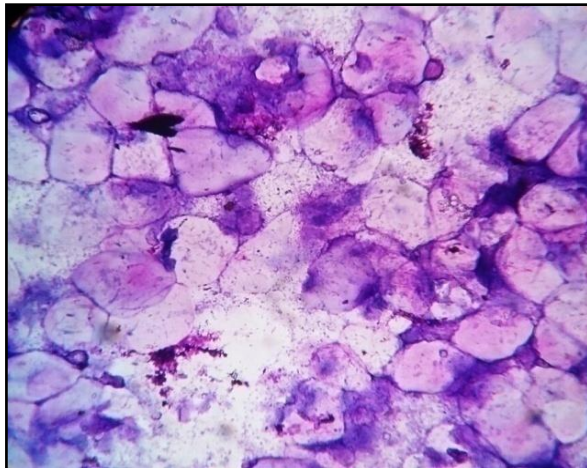


Fig 1: FNAC 400x -Epidermal inclusion cyst.

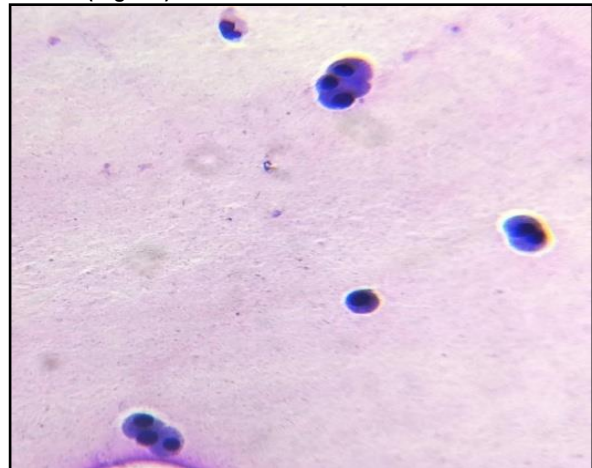


Fig 2: FNAC 100X - Ganglion Cyst

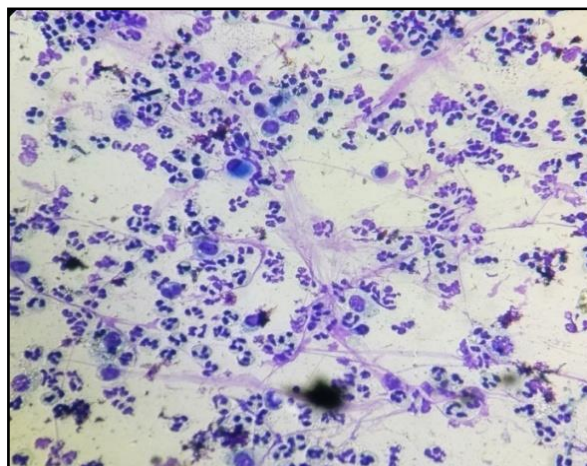


Fig 3: FNAC - Suppurative lesion.

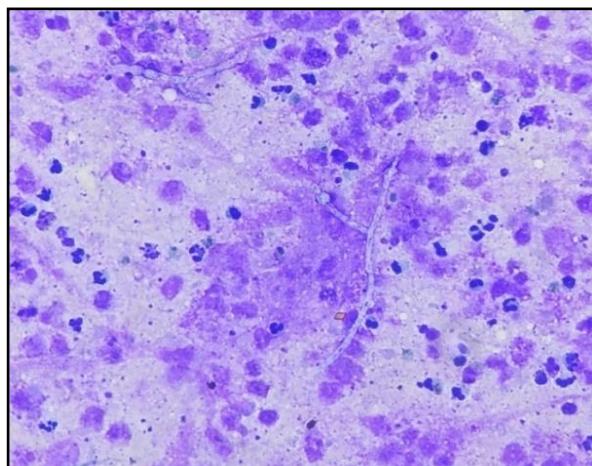


Fig 4: 100x- FNAC – Fungal Granuloma

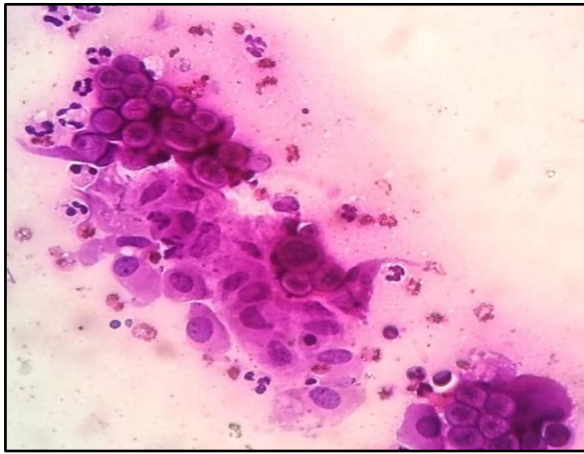


Fig 5: FNAC 100x- Cutaneous Rhinosporidiosis

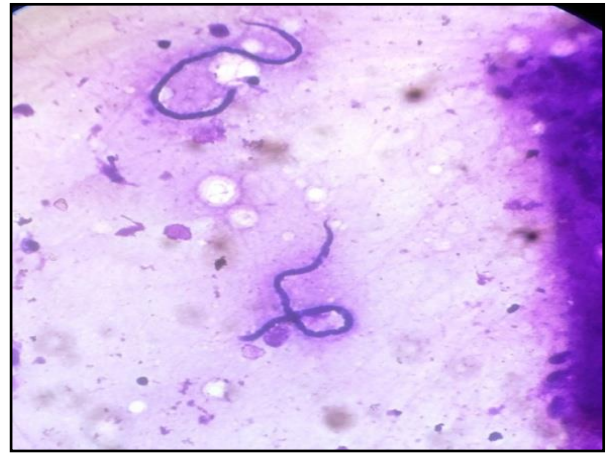


Fig 6: FNAC 100x – Cutaneous filariasis.

BENIGN NEOPLASMS (Fig 7-9)

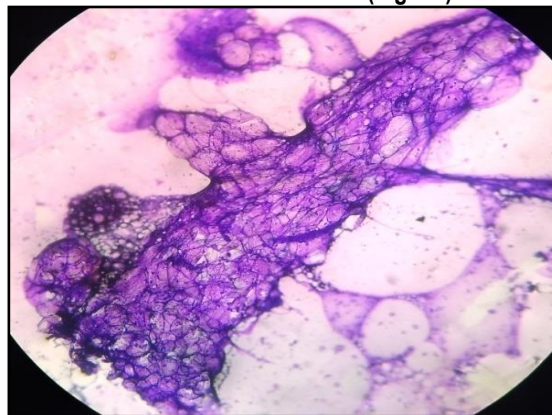


Fig 7: FNAC 100x -- lipoma.

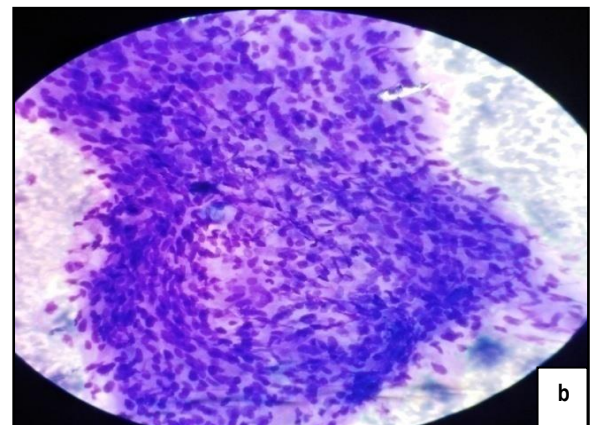
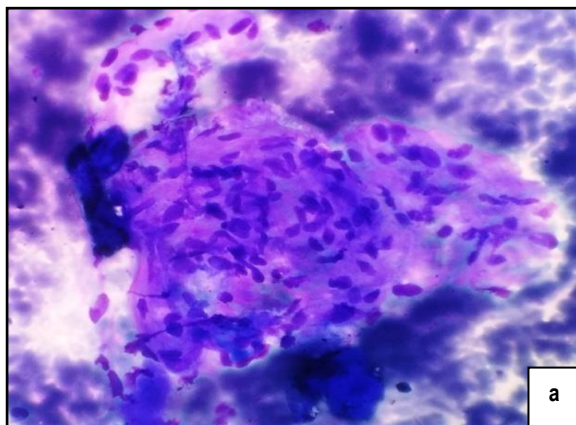


Fig 8 (a)(b) FNAC 100X– Schwannoma

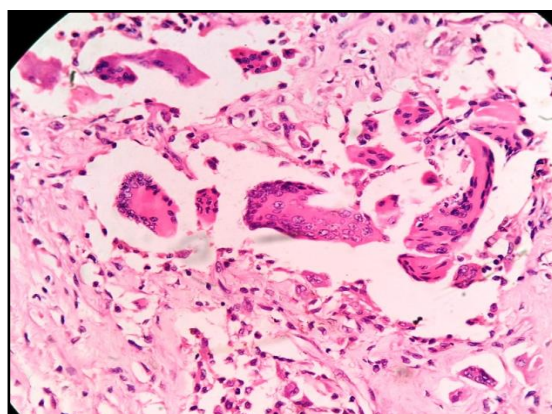


Fig 9: FNAC 100X–Giant cell of tendon sheath

ADNEXAL LESIONS (Fig 10-13)

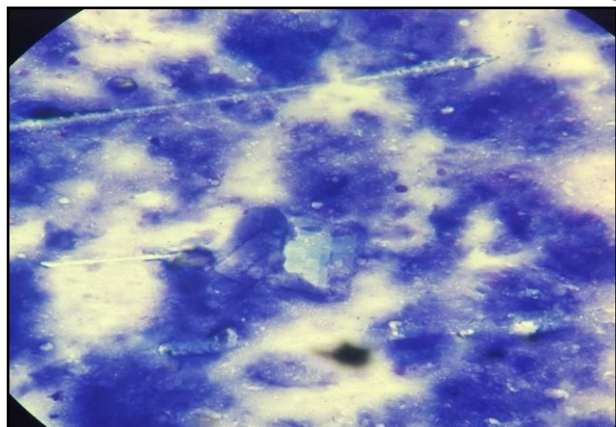


Fig 10: FNAC 100X- Trichilemmal cyst.

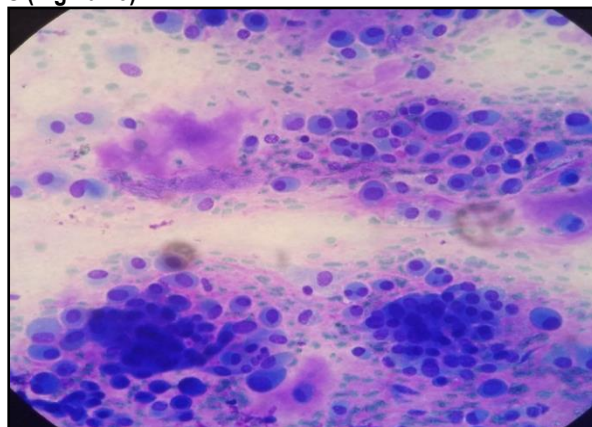


Fig 11 - FNAC 100x - Chondroid syringoma

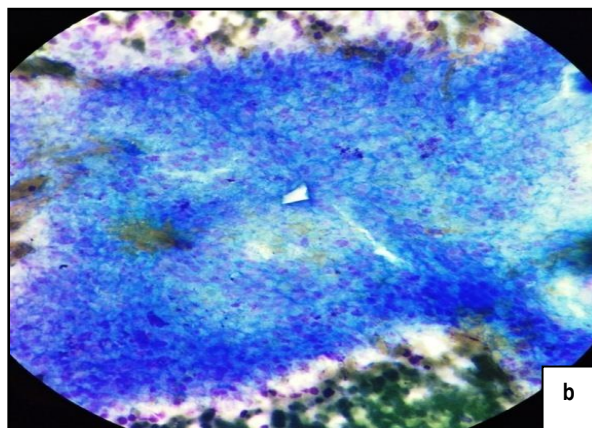
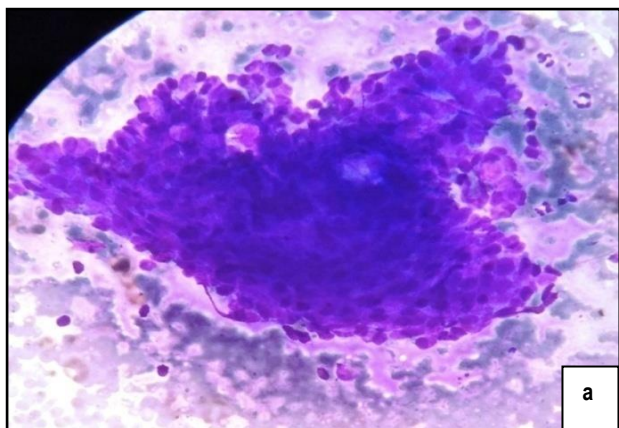


Fig 12 (a)(b): FNAC 100x – Pilomatricoma

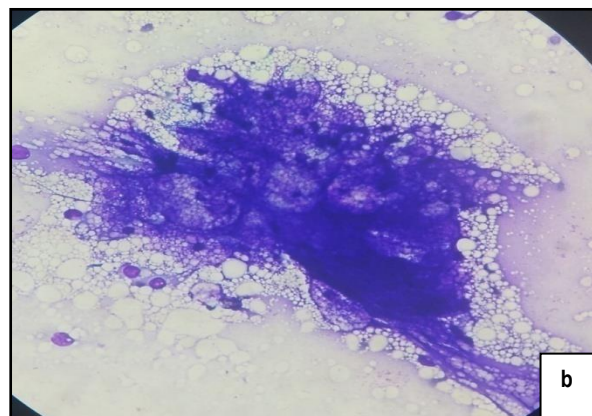
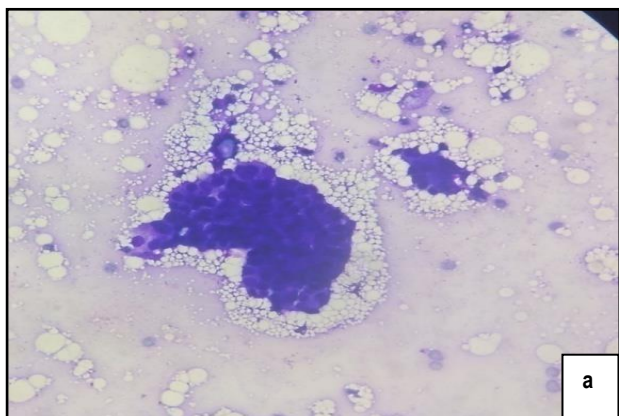


Fig 13 (a)(b): Benign adnexal lesion (Sebaceous origin)

MALIGNANT LESIONS (Fig 14-18)

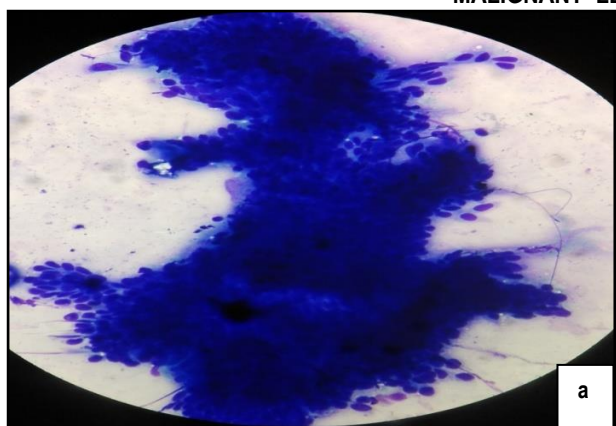


Fig 14 (a): Scrape Cytosmear 100x- Basal cell carcinoma



Fig 14 (b): Blackish patch on left eyelid

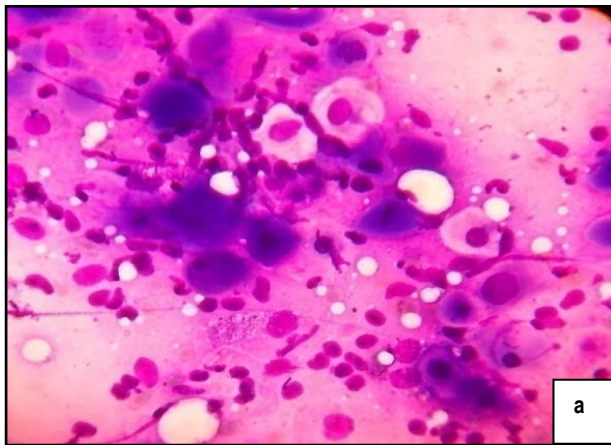


Fig 15(a): FNAC LP100X-- Squamous cell Carcinoma.



Fig 15 (b): Growth involving root of penis and glans

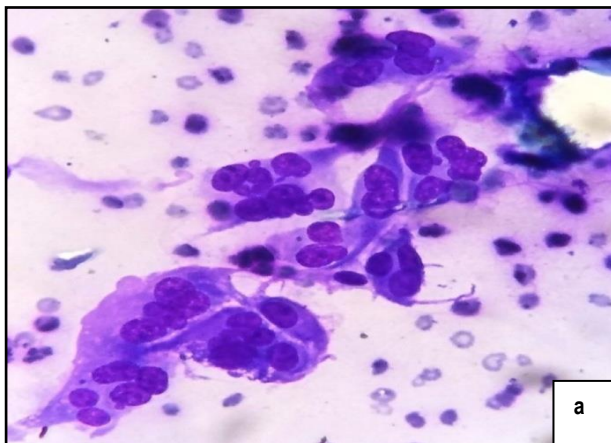


Fig 16 (a): FNAC100x - Pleomorphic Sarcoma.



Fig 16 (b): Diffuse swelling in the mid shaft humerus.

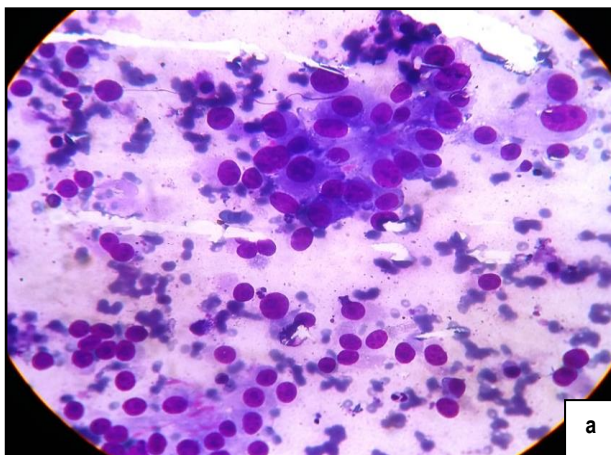


Fig 17 (a): FNAC - Malignant Melanoma.



Fig 17 (b): Huge swelling involving calf muscle.

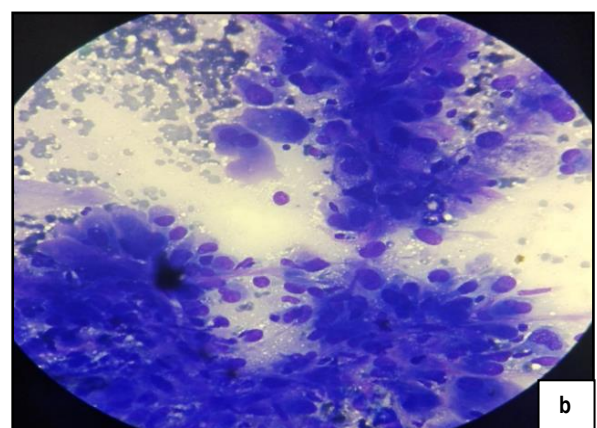
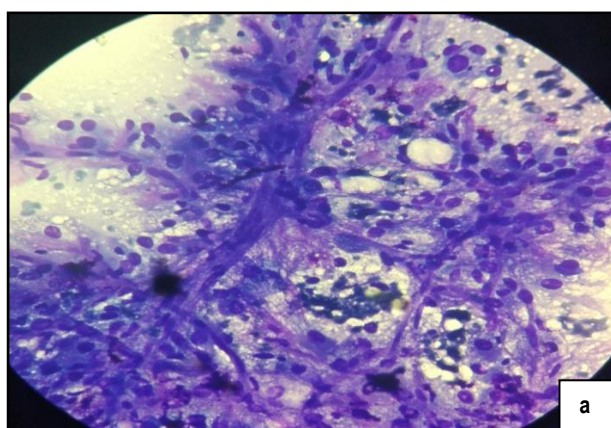


Fig 18 (a)(b): Myxoid Liposarcoma.

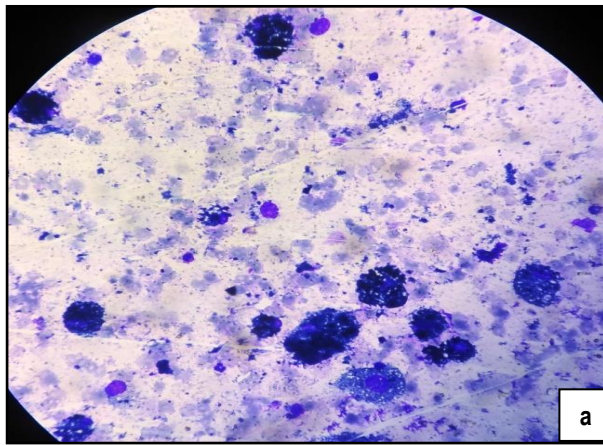


Fig 19 (a): FNAC 100X Cutaneous Metastatic Melanoma.

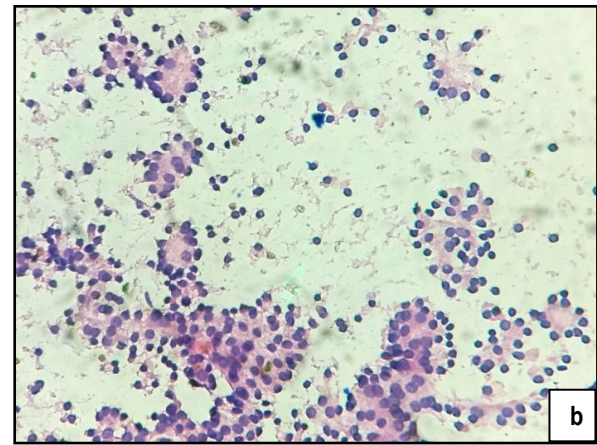


Fig19(b): FNAC-Cutaneous metastatic follicular lesion of thyroid.

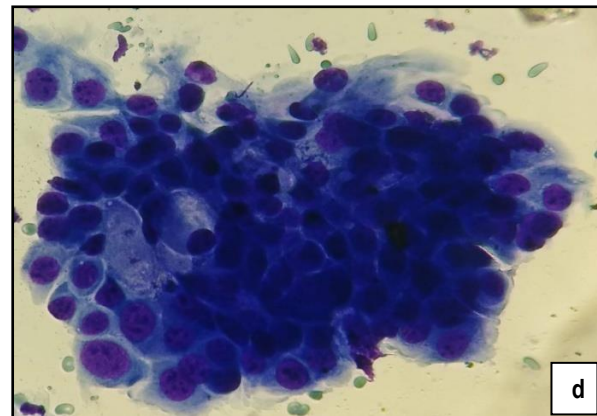
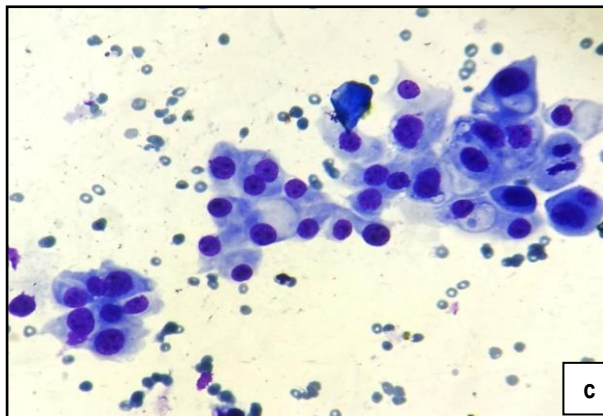


Fig 19 (c)(d): Metastatic cutaneous adenocarcinomatous deposits.[Primary unknown]

DISCUSSION

In the present prospective study of skin and subcutaneous lesions, a total of 712 cases have been evaluated cytologically of which 340 cases were non neoplastic and 372 were neoplastic in nature. Of the 372 neoplastic lesions 268 cases were benign neoplasms and 104 cases were malignant neoplasms. Epidermal Inclusion Cyst [170 cases-50%] was the most common non neoplastic lesion in our study, followed by ganglion cyst [100 cases-29.4%] and suppurative lesion in the 3rd place [60 cases-17.6%]. Other lesions in the non-neoplastic category were fungal granulomas, cutaneous rhinosporidiosis and filariasis that constituted [5 cases each, 1.47%]. We got three cases of cutaneous rhinosporidiosis which presented as huge swellings in the knee, chest wall and groin regions respectively and was sent to our lab to rule out carcinoma/ sarcomas due to rapid growth history and huge size. On FNAC we got sporangia in different stages of maturation that confirmed our diagnoses and resolved our dilemma in ruling out malignancy. So one should always think a possibility of infectious etiology in case of short duration rapidly enlarging masses other than malignancy. 2 cases of filariasis were reported one presenting as a subcutaneous lesion in medial aspect of right elbow and another case was reported in the male breast presenting as a nodule.

Our observation was concordant with the study done by Bhowmik et al.³ In benign neoplasm category lipoma was most common which was seen mostly in age groups of 20-50 yrs, that was identical with the study done by Beg et al.⁴

Second benign neoplasms were benign spindle cell tumours that constituted [50 cases-18.6%], however studies done by Nagira et

al⁵ showed most common benign neoplasm to be Spindle cell tumour (31.5%) followed by lipomatous tumour (14.6 %) that showed a discordant result .

Amongst Malignant neoplasms Squamous cell carcinoma was the most common malignant tumour [85 cases out of 104 cases, 81.7%] that was seen mostly in between 4th decade to 6th decade involving the cheek and lower lip which was identical to the study done by Orell et al.⁶ One case of Squamous cell carcinoma was seen in 40 yr male, affecting the genitalia around the glans penis.

Malignant melanoma and Basal cell carcinoma being second most common in malignant neoplasm category that outnumbers the study by Hadja S k et al.⁷ Out of 5 cases of melanoma, one case of melanoma 55 yr male presented with a diffuse swelling in the calf muscle since 8 months which on aspiration study was confirmed as malignant melanoma.

All the basal cell carcinoma studied in our case were present in the face, which was similar to studies done by Allen and Malberger et al.^{8,9} In one of our cases of basal cell carcinoma a 65year male presented with blackish patch in the eyelid area. Scrap cytosmear was done from that area as FNAC was inaccessible to that site. Cytological findings was consistent with basal cell carcinomas.

5 cases of malignant soft tissue lesions were diagnosed in our study that outnumbered the observation by Beg et al. Some of the soft tissue lesions (malignant) were pleomorphic sarcoma that presented in a 50 yr old man in the shaft of humerus and Myxoid liposarcoma in a 45 yr old male on thigh. Majority of the malignant lesions in our study were further confirmed by biopsy which when correlated with cytology, showed no discordance in the results.

CONCLUSION

Review of literatures have also proved the efficacy of FNAC in skin and subcutaneous lesions, especially studies conducted by Pranab D et al¹⁰, Rajat G et al¹¹ and Karki S et al¹² who have also established the practice widely in the country. Cytology of skin and soft tissue lesions are very much useful in present patient care and management provided done very skillfully and choosing intelligently the method of scraping or FNAC by suitable needle (24 or 22 gauge needle). Sometimes inflammatory lesions do present with huge swellings and mimicks malignancy, in such cases doing FNAC may solve the diagnostic dilemma amongst clinicians and cytopathologists. Except for few malignant soft tissue lesions where biopsy needs confirmation, FNAC is still gaining acceptance by treating physicians and surgeons.

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