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ORIGINAL RESEARCH

Utility of fine needle aspiration cytology(FNAC) in the diagnosis of cutaneous and subcutaneous swellings: A retrospective analysis

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ABSTRACT

Introduction: In the past, FNAC was mostly utilized for evaluating surgical entities such palpable breast lesions and head and neck lesions. But as more and more conservative surgical excisions and biopsies are performed, the scope of FNAC has recently broadened to include a variety of skin and subcutaneous swellings. Although excision biopsy with histopathological examination is still regarded as an important diagnostic tool and confirmatory test for most lesions, FNAC is a fast, simple, and reasonably priced diagnostic procedure that provides a nearly correct diagnosis in ruling out benign and malignant lesions. **Aim:** To determine the utility of fine needle aspiration cytology (FNAC) in the diagnosis of cutaneous and subcutaneous swellings. **Material and methods:** The current retrospective study was carried out over a period of one year at the Govt. Medical College, Udhampur, in the Department of Pathology and a total of 131 patients with diverse skin and subcutaneous swellings were evaluated cytologically (FNAC). The data was gathered using a structured clinical proforma and enteredinto Microsoft Excel sheet. SPSS (Statistical Package for the Social Sciences, SPSS Inc., v.16) was used to do the statistical analysis. **Results:** There were 61 (46.5%) females and 70 (53.5%) males in total in this study. The study patient population ranged in age from 8 to 85 years old, with a mean age of 38.02±16.70 years. The youngest patient was eight years old. FNAC aspirate showed that the whitish aspirate was the most common type (44.3%). **Conclusion:** Benign lipomatous lesion was the most common diagnosis followed by benign spindle cell lesions. The use of FNAC is very cost effective and helpful in evaluation of skin and subcutaneous swellings.

Keywords: FNAC, Skin lesions, Skin tumors and Cytology.

INTRODUCTION

In surgical practice, subcutaneous swellingsare one of the most frequent occurrences observed. Subcutaneous swellings can have a variety of pathologies, from malignant tumors to epidermal inclusion cysts. Subcutaneous swelling caused by fungal infections can be present in immunocompromised patients.[1]

All over the body, cutaneous and subcutaneous swellings can be a presenting feature of a broad spectrum of neoplastic and inflammatory disorders.[2]

The clinical presentation can also vary greatly: a lesion can be tiny or large in size, painless or tender, grow slowly or quickly, have a solid, cystic, or hard nature, or single or multiple lesions. The majority of cases can be accurately assessed and diagnosed with the aid of appropriate history taking, assessment of clinical symptoms and signs, local clinical examination followed by FNAC, but some cases require both radiological and histological correlation because of the complexity of the lesion itself.[3]

Previously, FNAC was primarily utilized for surgical entities such as palpable breast lesions and Head and Neck lesions. But now these days the scope of FNAC has expanded to include various skin and subcutaneous swellings as it reduces the frequency of extensive surgical excisions and biopsies. FNAC is a quick, easy, and affordable diagnostic procedure that offers a nearly accurate diagnosis in ruling out benign and malignant lesions, even though biopsy is still considered a valuable diagnostic tool and confirmatory for the majority of suspicious lesions. It aids physicians in organizing their treatment plans appropriately for improved patient care and supervision.[4]

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Thus, the present study was undertaken to determine the utility of fine needle aspiration cytology(FNAC) in the diagnosis of cutaneous and subcutaneous swellings.

MATERIAL AND METHODS

The present retrospective study was conducted in the Department of Pathology, Govt. Medical College, Udhampur from January 2023 to December, 2023. In the present study a total of 131 patients were cytologically evaluated who presented with various skin and subcutaneous swellings. Inclusion criteria for our study was skin and subcutaneous swellings in any part of body of any age group advised for FNAC. Exclusion criteria were deep intramuscular swellings and flat and papular skin lesions. In each case, a detailed history like patient's age, gender, onset and progression of clinical symptoms and clinical examination findings including location, size, shape, consistency and number of swelling were noted with duly signed consent form.

FNAC was performed in all the 131 cases as an outpatient procedure using a 22-23-gauge needle attached to a 20 cc plastic syringe without local anesthesia. The lesion site was cleaned using the Iodine solution and ethyl alcohol. Aspirates from different parts of the swellings were collected by alternating the direction of the needle inside the swelling and giving multiple passes. Both air dried and alcohol fixed smears were prepared and stained by May-Grunwald Giemsa and Hematoxylin & Eosin using standard procedures.

The data was collected in a structured clinical proforma and recorded in Microsoft Excel sheet. The statistical analysis was done using SPSS (Statistical Package fortheSocialSciences,SPSSInc.,v.16).

RESULTS AND OBSERVATIONS

A total of 131 cases of cutaneous and sub-cutaneous swellings were analyzed.

Table 1. Age and gender distribution of study participants

Age Group	Gender		Total
	Male	Female	
0-20 years	12	8	20
	17.1%	13.1%	15.3%
21-40 years	25	35	60
	35.7%	57.4%	45.8%
41-60 years	22	15	37
	31.4%	24.6%	28.2%
>60 years	11	3	14
	15.7%	4.9%	10.7%
Total	70	61	131
	100.0%	100.0%	100.0%

variables such as age and sex distribution were explained in Table-1. In this study, total number of femaleswas 61 (46.5%) and males were 70 (53.5%). The mean age of patients in this study was 38.02±16.70 years and age range were 8-85 years. Age of the youngest patient was 8 years.

In this study, we found that most of the patients were males and most common age group affected was 21-40 years with 60 (45.8%) affected participants (Table-1).

Table 2. Type of aspirates

Type of Aspirates	Frequency
Whitish Aspirate	58 (44.3%)
Cheesy Material	10 (7.6%)
Blood Mixed Aspirate	53 (40.5%)
Clear Watery	4 (3.1%)
Yellow	1 (0.8%)
Jelly Like	3 (2.3%)
Dirty White	2 (1.6%)
Total	131 (100%)

An observation of FNAC aspirate showed that the whitish aspirate was the most common type in 58 (44.3%) followed by blood mixed aspirate in 53 (40.5%) and cheesy material in 10 (7.6%) cases (Table-2).

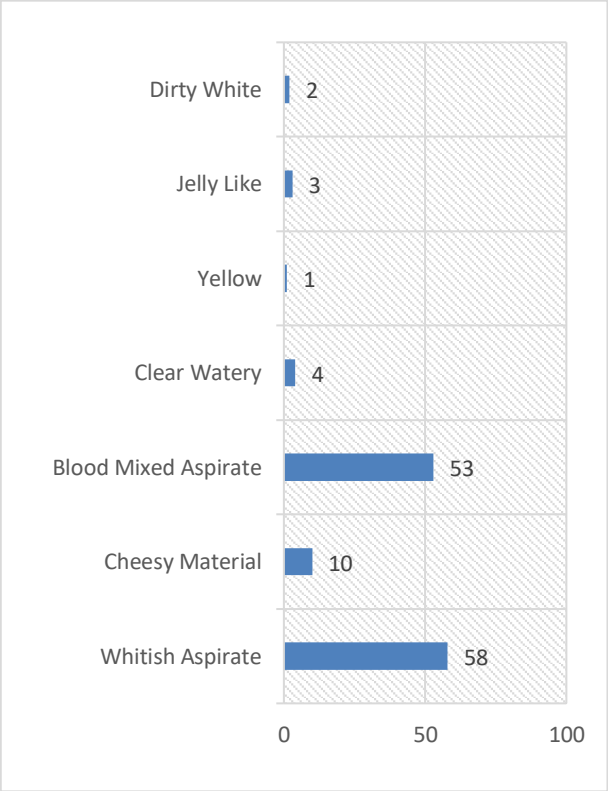

Fig. 1. Type of aspirates

Table 3. Distribution of cases according to Cytodiagnosis

Cytodiagnosis	Frequency
Lipomatous Lesion	60 (45.8%)
Epidermal Inclusion Cyst	38 (29%)
Benign Cystic Lesion	1 (0.8%)
Benign Spindle Cell Lesion	10 (7.6%)
Benign Giant Cell Tumor	4 (3.1%)

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Hemangioma	5 (3.8%)
Ganglion Cyst	2 (1.5%)
Blood	2 (1.5%)
Descriptive Report	9 (6.9%)
Total	131 (100%)

Distribution of cases according to cytodiagnosis is explained in Table-3. Lipomatous lesion was the predominant diagnosis with 60 (45.8%) affected cases, followed by epidermal inclusion cyst with 38 (29%) cases and benign spindle cell lesion with 10 (7.6%) cases. There were 5 (3.8%) cases of hemangioma, 4 (3.1%) cases of benign giant cell tumor and 2 (1.5%) cases of ganglion cyst. There was only 1 (0.8%) case of benign cystic lesion. During FNAC, 2 (1.5%) cases yielded only blood and there were 9 (6.9%) descriptive reports.

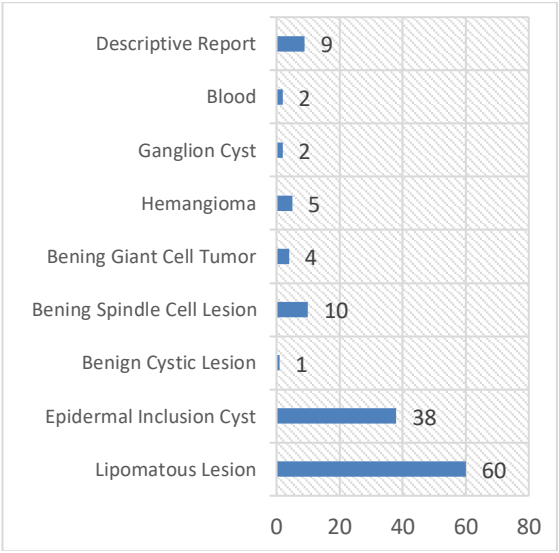

Fig.2. Distribution of cases according to Cyto-diagnosis

DISCUSSION

With today's knowledgeable and critical lifestyle, the importance of a pathology report that is precise, timely, and well-structured has grown. In our study FNAC was done for a total of 131 cases of cutaneous and sub-cutaneous swellings were analyzed.

It was reported that the mean age of patients in this study was 38.02±16.70 years and age range was 8-85 years. Age of the youngest patient was 8 years and most the patients were males and most common age group affected was 21- 40 years. There was male predominance and the male female ratio was 1.14:1. These findings are consistent with the study performed by Gupta C et al. (2022) whoreported that the majority of the study subjects were male (male female ratio was 1.4:1). The age of study subjects ranged between 6 months to 85 years and maximum subjects were in the age group of 31-40 years and 21-30 years.[2]In similar study carried out by Patel DR et al. (2020) the age of the study subjects ranged between 1 year to 90 years and male predominance was found as the male: female ratio was 1.4:1.[5]

In our study FNAC aspirate observation revealed that the most prevalent form was the whitish aspirate, occurring in 58 (44.3%) instances, followed by blood mixed aspirate in 53 (40.5%) cases and cheesy material in 10 (7.6%) cases. These study outcomes are comparable with the study done by Kala P et al. (2014) in which FNAC aspirates were clear (69.3%) followed by purulent (16.9%), blood mixed (13.1%) and particulate (0.7%).[6] In other study Handa U et al. (2008) reported that FNAC aspirates were clear (48.8%%) followed by purulent (28.8%), particulate (15.2%) and blood mixed (7.2%).[7]

Further it was reported that with 60 (45.8%) affected cases, lipomatous lesion was the most common diagnosis. There were 38 (29%) cases of epidermal inclusion cysts, and 10 (7.6%) cases of benign spindle cell lesions. Four (3.1%) cases of benign giant cell tumours, five (3.8%) cases of hemangiomas, and two (1.5%) cases of ganglion cysts were reported. The percentage of benign cystic lesions was only 1 (0.8%). Nine instances (6.9%) produced descriptive reports during FNAC, while two cases (1.5%) produced only blood. These results are similar to the study performed by Mazumder G et al. (2016) who evaluated 356 skin and superficial soft tissues and found that 72.04% lesions [lipoma (81.65%), benign spindle cell tumour (15.38%) and vascular lesion (2.95%)] were neoplastic and 27.95% lesions [containing epidermal inclusion cyst (51.17%), suppurative lesion (31.76%), Granulomatous lesion (14.11%) and ganglion (2.94%)] were non neoplastic in nature.[8]In another study Beg S et al. (2012) observed that malignant lesions were reported among 16.7%% study subjects.[9]

CONCLUSION

In our study FNAC was done for all the patients who presented with various skin and subcutaneous swellings. It was concluded that lipomatous lesion was the most common diagnosis followed by benign spindle cell lesions, epidermal inclusion cysts. There were four benign giant cell tumor cases, five hemangioma cases, and two ganglion cyst cases recorded. There was only one benign cystic lesion (0.8%) out of the total.

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