



CYTOMORPHOLOGICAL SPECTRUM OF SUPERFICIAL PALPABLE SWELLINGS OF THE SKIN ON FNAC

Pathology

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ABSTRACT

INTRODUCTION: Many inflammatory, non-neoplastic and neoplastic lesions present as palpable swellings on the surface of the body. FNAC is a simple, safe, rapid and reliable procedure to diagnose them. **AIM:** To determine the cytomorphological spectrum of superficial palpable lesions of the skin and to categorize them into non-neoplastic and neoplastic lesions. **MATERIAL AND METHOD:** A two year study of all palpable cutaneous and subcutaneous swellings presenting in the department of Pathology, GMC Jammu for FNAC was carried out. **Results:** Most common benign lesions were lipoma (50%), followed by epidermal inclusion cyst (24.44%). Malignant cases comprised only 2.85% of the total cases.

KEYWORDS

INTRODUCTION

Fine needle aspiration cytology (FNAC) is the study of cells obtained by vacuum. The accuracy of FNAC when applied by experienced well trained practitioners can approach that of histopathological examination in providing an unequivocal diagnosis (Orell SR and Sterrett, 1999).

The main indications of FNAC in tumor and tumor like lesions of skin and subcutis is investigations of tumors, distinction between reactive process and neoplasia, suspected malignancy and recurrent tumors. It is a rapid, simple, inexpensive and reliable method for investigation of nodules, indurations and thickenings related to surgical scars or elsewhere in the skin or subcutis in patients with known malignancy.

Palpable cutaneous and subcutaneous lesions can arise due to a variety of conditions including inflammatory, neoplastic, or metastasis from a primary malignant lesion. FNAC on palpable lesions has advantages for the patients as well as clinicians as it is painless, inexpensive and rapid OPD based procedure. A preliminary diagnosis can be made within short time and surgery can be avoided if lesion proves to be non-neoplastic or self-limiting. In the cases of metastatic malignancies, it allows pre-operative staging and planning of the extent of surgery.

Some of the lesions that can be diagnosed on FNAC include epidermal inclusion cyst, lipoma, ganglion, neurofibroma, pilomatricoma, benign fibrous histiocytoma, skin adnexal tumors, basal cell carcinoma(BCC), squamous cell carcinoma (SCC), malignant melanoma and sebaceous carcinoma. Some of the subcutaneous nodules diagnosed by FNAC are metastasis from cervix, lungs, breast, prostate, ovary, liver, kidney and gall bladder.

Fine needle aspiration cytology was carried out in the department of Pathology, Government medical college (GMC) Jammu which is a tertiary care centre. The present study was planned to determine the spectrum of superficial palpable cutaneous and subcutaneous lesions and to find out usefulness of FNAC in their diagnosis.

MATERIAL AND METHODS

This study was conducted on patients with superficial palpable swellings on skin surface, referred for FNAC to the department of pathology, GMC Jammu over a period of two years from November 2018 to October 2020. The clinical information regarding signs, symptoms and local examination of swelling, the clinical data regarding any previous FNAC or biopsy or any lab investigation, radiological tests were recorded. Superficial palpable lumps and bumps of skin, subcutaneous tissue and soft tissue were included in the study, whereas deep seated swellings, thyroid swellings, lymph node swellings, breast swellings and salivary gland swellings were excluded from the study. The aspiration was performed with a fine needle of 22 gauge attached to 20 ml disposable syringe fitted to Franzen handle. 4-

5 smears were made. Two smears were immediately fixed in 95% ethyl alcohol and stained with Papanicolaou (PAP) and other smears are air dried and stained with May Grunwald Giemsa stain (MGG).

RESULTS

A total of 640 patients presented for FNAC of superficial palpable lesions.

Out of total 640 cases, 10 cases were not considered satisfactory for various reasons viz. inadequate aspirated material, blood only and poorly prepared smears etc.

Out of total 630 satisfactory cases, 351 were males and 279 females with male to female ratio of 1.25:1.

Lesions were noted in all age groups with 3/4th of cases in adults between 21-60 years.

245 (38.88%) were found in trunk region, 208 (33.01%) in extremities and 177 (28.09%) in head and neck region.

Out of total 630 cases, malignancy was diagnosed in 18(2.85%) of all the cases. Benign neoplasms comprised of 348(55.23%) cases and non-neoplastic lesions were 264(41.9%).

Table 1: Distribution of benign neoplastic lesions.

Lesion	N	%	Cytology
Lipoma	315	90.51%	Mature adipocytes in the background of fat droplets
Hemangioma	9	2.58%	Strands of endothelial cells in hemorrhagic background
Neurofibroma	5	1.43%	Wavy pattern of spindle cells with fibrillar stroma & nuclear palisading
Pilomatricoma	5	1.43%	Tight clusters of basaloid cells along with aggregates of degenerate, anucleate keratinised squamous cells (ghost cells)
Schwannoma	4	1.14%	Spindly palisading bland nuclei with pointed ends embedded in a fibrillar stroma

Giant cell tumor of tendon sheath	3	0.86%	Mixture of mononuclear cells with osteoclastic type giant cells
Benign fibrous fibrohistiocytoma	2	0.57%	Benign fibroblasts with histiocytes
Unclassified (Benign spindle cell lesion)	5	1.43%	
Total	348	100%	

Lipoma was the most frequent benign neoplasm (90.51%) followed by nerve sheath tumors (2.58%) and hemangioma (2.58%). (table 1).

Table 2: Distribution of non -neoplastic lesions.

Lesion	N	%	CYTOLOGY
Epidermal inclusion cyst	154	58.33%	Benign squamous cells, anucleate squames, inflammatory cells & debris
Abscess	58	21.96%	Intact & disintegrated neutrophils with areas of necrosis
Ganglion cyst	50	18.93%	Pale histiocytes and myxoid matrix
Gouty tophi	1	0.37%	Needle shaped birefringent uric acid crystals
Nodular fasciitis	1	0.37%	Fibroblasts with spindly nuclei, Bi and multinucleate cells were also present. The background was myxoid.
TOTAL	264	100%	

Table 2 shows that epidermal inclusion cyst was the most frequent non-neoplastic lesion (58.33%) followed by abscess (21.96%) and ganglion cyst (18.93%).

Table 3: Distribution of malignant lesions.

Lesion	N	%	CYTOLOGY
Metastatic deposits	10	55.55%	Adenocarcinoma- cellular smears with tumor cells showing eccentric large nuclei with cytoplasmic vacuolations Squamous cell carcinoma- pleomorphic cells with hyperchromatic nuclei and orangeophilic cytoplasm
Basal cell carcinoma	2	11.11%	Tight clusters of basaloid cells with nuclear palisading along the edges
Pleomorphic sarcoma(MFH)	2	11.11%	Atypical histiocyte like spindle cells, multinucleated giant cells in necrotic background
Malignant melanoma	1	5.55%	Plasmacytoid tumor cells with intracytoplasmic melanin pigment and prominent macronucleoli
Malignant round cell tumor	1	5.55%	Small round cells in clusters with high NC ratio, fine chromatin and 1-2 nucleoli
Malignant skin appendageal tumor	1	5.55%	Plasmacytoid tumor cells forming tubules and cords in pink background
Squamous cell carcinoma	1	5.55%	Pleomorphic malignant cells with dense squamoid cytoplasm
Total	18	100%	

Metastatic carcinoma constituted more than half of all malignant tumors. Basal cell carcinoma and pleomorphic sarcoma was seen in 2 cases (11.1%) each. Other malignant tumors comprised of a single case (5.5%) each of malignant melanoma, malignant round cell tumor, skin appendageal tumor and squamous cell carcinoma(table 3).

DISCUSSION

In our study, lesions were noted in all age group with maximum (75%) cases seen in the age group of 20 – 60 years. Singh S et al. (2013) observed maximum number of cases of skin nodules in the age group of 41-50 years. Benign neoplastic lesions were most commonly observed in the age group of 31-40 years which is similar to the findings of the study conducted by Singh S et al. (2013). Malignant lesions were present more commonly in the age group of 60 years and above. The age group of cutaneous malignant metastasis was reported as 40-85 years in a study conducted in Nepal by Karki et al. (2011) and 64% of the total subjects were males. Similar studies done by Falagas ME et al.(2005) also demonstrated a higher incidence among males.

Of the 630 satisfactory cases, maximum cases were benign neoplastic (55.23%) followed by non neoplastic (41.90%) and malignant cases were the least (2.85%). This is in agreement with the findings of Nayak and Raman (2020) who in their study of 1427 subcutaneous nodules reported that malignant cases comprised only 2.75%. Jain et al (2015) in their study have reported 3.1% malignant skin nodules by FNAC.

In the present study, the maximum number of cases were lipomas (50%). Similar results were observed in the study conducted by Layfield LJ et al. (1993) and Singh S et al. (2013). Lipomas constituted 65% of the total cases in the study conducted by Layfield LJ et al., (1993) and 45% of the total cases in the study by Singh S et al. (2013). Lipoma constituted the commonest benign superficial palpable lesion and comprised 315 (90.51%) cases out of total 348 benign neoplastic cases. It was seen in all age groups with maximum cases (80%) between 21-60 years. The males comprised 186 cases (59.04%) and females constituted 129 cases (40.96%). The majority of lipomas were seen in the trunk and extremities (89%). Histopathology was available in 10 cases and findings in all the 10 cases correlated with cytological findings.

In our study, among the malignant skin nodules maximum were metastatic deposits (55.55%) with majority of them presenting in the trunk region and presenting in age group above 60 years. This is in concordance with the study conducted by Karki et al., (2011) where the metastatic deposits were reported to be 60% amongst the total malignant skin nodules. Out of the 10 metastatic deposits, most common nature of deposits were of adenocarcinoma which was seen in 6 cases, followed by the deposits of squamous cell carcinoma which was seen in 3 cases and 1 case of duct carcinoma breast. In 4 cases with known primaries, their histopathology slides were reviewed and correlated with cytological findings of the metastatic deposits.

The predominant sites involved in our study were the chest wall and abdomen including umbilicus. This was in concordance with the observation by Aldret S et al. (2012) where the predominant sites were scalp, abdomen and chest wall. The predominant type of tumor observed was adenocarcinoma, as seen in similar study done by Mendonca B et al.(2015). The pattern of spread is related to the mode of dissemination and the anatomic proximity of the primary neoplasm. Chest wall involvement is usually seen in lung and breast carcinoma while abdominal wall is usually seen in gastric malignancies.

Among the subjects with unknown primary, the predominant tumor in our study was adenocarcinoma.

In case of metastasis with unknown primary, fine needle aspiration studies can aid in suggesting the possible site of primary tumor by analysing the clues which suggest possible sites. Cytological examination thus has a role in diagnosing unknown primary tumors and is important prognostically as skin metastasis usually has a dismal prognosis.

CONCLUSION

FNAC is the most useful immediate procedure for diagnosis of cutaneous and subcutaneous swellings to determine their pathology, especially to rule out malignancy.

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