

An approach to axillary swellings-cytomorphological (fine needle aspiration cytology) study



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ABSTRACT

Background: The axilla, a triangular area which is located between the upper arm and thorax, contains blood vessels, nerves, lymph nodes, and fat. Axillary swellings can arise from these various mesenchymal tissues present in the axillary area. The most common palpable axillary masses are usually lymph nodes. Fine needle aspiration cytology (FNAC) is the first line investigative technique with differential diagnosis includes reactive hyperplasia, inflammatory conditions, granulomatous disorders and malignancy. FNAC is a rapid, less invasive, less traumatic, and easily accessible and a cheap diagnostic tool to differentiate the benign or the malignant nature of the swelling. **Aims and Objectives:** Study is undertaken to document the spectrum of axillary lesions. Value of FNAC as a rapid diagnostic tool in diagnosing the axillary lesions. **Materials and Methods:** Present study is an 18 months cross-sectional study carried out in department of pathology, tertiary care hospital. Patients demographic and clinical data were collected from request forms. Slides were reviewed and analyzed. Data were entered in microsoft excel and analyzed. **Results:** Out of total 110 cases analyzed, ratio of female to male is 3.07. There were 41.8% benign and 13.6% malignant cases. 42.7% were inflammatory and 1.9% congenital lesions (ectopic breast). The most common lesions encountered are from lymph node (51.8%) (lymphadenitis-most common) followed by soft tissue tumor (Lipoma – most common). Rare lesions include nonhodgkin lymphoma, hodgkin lymphoma, neurofibroma, and chondroid syringoma. **Conclusion:** FNAC is an outpatient-based accurate, rapid procedure helps in timely diagnosis of various axillary lesions including clinically and radiologically ambiguous cases. It also helps to discriminate benign and malignant lesions with less chances of false negative results.

Key words: Chondroid syringoma; Ectopic breast tissue; Fine needle aspiration cytology; Lipoma; Lymphadenitis; Lymphoma; Neurofibroma

INTRODUCTION

The axilla, a triangular area which is located between the upper arm and thorax. Axillary contents are axillary artery, axillary vein, infraclavicular part of the brachial plexus, five groups of axillary lymph nodes and the associated lymphatics, the long thoracic and intercostobrachial nerves, axillary fat and fibrous tissues.¹ Axillary swellings can arise from the various mesenchymal tissues, skin and adnexal structures and ectopic breast tissues. These lesions range from developmental and reactive to neoplastic.

The common presenting symptoms include swelling, tenderness, and restricted movement of the arm. Axillary masses causes clinical dilemma and have varied differential diagnosis.

Developmental lesions in the axillary region are usually accessory breast and occur in 0.4–6% of women. They may present as asymptomatic mass or cause pain, restriction of arm movement, cosmetic problems or anxiety. Commonly accessory breasts are bilateral. Most of the ridge undergoes regression except on the anterior thorax where breast

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develop. If this regression does not occur and ridge persists, supernumerary nipples or breasts develop along milk line. Accessory breast tissue usually becomes noticeable after hormonal stimulation usually after puberty, pregnancy or lactation. They can undergo monthly premenstrual changes such as tenderness, swelling and irritation from clothes. There have been reports of fibroadenoma and even cancer developing in the accessory breasts.²

Ectopic breast tissue- Breast tissue extending high up in the axilla commonly forms nodules or irregular lumps noted by the patient, especially during pregnancy and lactation. The ectopic glandular tissue may take part in fibrocystic change, and fibroadenoma or primary carcinoma can occasionally arise from ectopic tissue.³

The most common palpable masses in the axilla are usually lymph nodes. Axillary lymph nodes can be divided into three levels based on their relationship with the pectoralis minor muscle. Level 1 lie inferolateral, Level 2 lie posterior and Level 3 lie superomedial to the muscle. Enlarged lymph nodes are a prime target for FNA. In an adult, lymph nodes >1–2 cm are an immediate source of concern and, unless the cause is evident, the enlarged node should be aspirated. Although FNA is applicable to children also, lymphadenopathy in children and young adults is common and usually due to reactive hyperplasia.⁴ It is caused by inflammation of the lymph nodes or the adjacent organs, such as the breast or lung. Collagen vascular disorders, including rheumatoid arthritis, psoriasis, scleroderma, and systemic lupus erythematosus, also cause nodal hyperplasia. Other non-neoplastic conditions as inflammation, infection, autoimmune disorders and hypersensitivity reactions are associated with lymphadenopathy.⁵

Unlike malignant lymphadenopathy, which usually has circumscribed borders, tuberculous lymphadenitis commonly has ragged indistinct borders because of peri adenitis and surrounding soft tissue edema. Matting of lymph node is a common feature of tuberculosis.

Other indications of FNA of lymph node is to diagnose primary lymph node tumors such as Hodgkin lymphoma, non-Hodgkin lymphoma, metastatic tumor of unknown primary, and Metastatic lymph node in a patient with a known malignancy.⁴ Lymph nodes are the most common site of metastatic malignancy, and sometimes constitute the first clinical manifestation of the disease.

Breast malignancies are the second most common cause of cancer-related mortality among women. Axillary lymph node staging is the most important prognostic indicator of outcome in patients with breast cancer and has a critical place in management of this disease. An ultrasound

examination is recommended to detect suspicious involved axillary lymph nodes. Ultrasound guided fine needle aspiration is a quick non morbid and an appropriate non-invasive method method of staging disease in the axilla.⁶ A positive ultrasound-guided FNA result obviates sentinel lymphadenectomy, allowing the patient to proceed directly to surgery or neoadjuvant chemotherapy. Patients with negative findings at ultrasound-guided FNA will still need to undergo sentinel lymphadenectomy for evaluation of the axilla. Lymphadenopathy accounts for >80% of axillary masses and is the initial manifestation of lymphoma in 9% of cases. Non-Hodgkin's lymphoma more commonly affects the axilla. Lipomas are most common benign tumors composed of adipocytes divided into lobules by thin connective tissue septa. Blood vessels or muscle fibers may be prominent.

Fine needle aspiration cytology (FNAC) is a rapid, less invasive, less traumatic, easily accessible and a cheap diagnostic tool to differentiate the benign or the malignant nature of the swelling. An approach to FNAC using imaging techniques is crucial to reach a definitive diagnosis and for an appropriate treatment of the disease. This study is undertaken to document the spectrum of axillary lesions and to assess the value of FNAC as a rapid diagnostic tool in diagnosing the axillary lesions.

Aims and objectives

This study is undertaken to document the spectrum of axillary lesions and to assess the value of FNAC as a rapid diagnostic tool in diagnosing the axillary lesions.

MATERIALS AND METHODS

Present study is an 18 months cross-sectional study carried out in department of pathology, tertiary care hospital. The study was pre-approved by the Institutional Ethics Committee (IEC) for the final permission. Patients demographic data as well as clinical data are collected from request forms. All of these patients presented with superficial palpable swelling in the axilla. The initial assessment of these swellings was done by clinical examination. The cytological smears were then reviewed, analyzed, and classified into various diseases based on microscopic findings. The data collected was entered in Microsoft excel and analyzed. Results were expressed in terms of percentage.

Ethical approval

Approved –SIMS/IEC/581/2021-22.

Statistical analysis

Nil.

RESULTS

The present study was conducted in a tertiary care hospital in India. Among 116 cases analyzed, a total of 110 cases met the criteria for diagnosis. Six cases were excluded from the study due to presence of vague lump as well as inadequate material in the smears.

There were 83 females and 27 males, ratio of female to male is 3.07. The age of study population ranges from 4 months to 85 years old with mean age 40.1 years.

There were 41.8% benign cases and 13.6% malignant cases. The inflammatory cases accounts to 42.7% cases and 1.9% were of congenital lesions (ectopic breast). The most common lesions encountered are from lymph node (51.8%) (Lymphadenitis-most common) followed by soft tissue tumor (Lipoma –most common) (Table 1). Majority of the lymphadenitis comprises reactive lymphadenitis. Malignant lesions of lymph nodes include metastatic lesions and primary lymphomas. Primary lymphomas include 2 cases of non hodgkin lymphomas and one case of hodgkin lymphoma. The cytological smear of hodgkin lymphoma showed a classic reed Sternberg cell against a background of mixed population of WBCs (Figure 1). There were seven cases with clinical suspicion of metastases from carcinoma breast to the axillary lymph nodes. All seven cases got confirmed by cytopathological study. Other malignant lesions showed features of metastatic deposits of squamous cell carcinoma, adeno carcinoma, and malignant melanoma. The metastatic deposits of malignant melanoma showed abundant intracellular melanin deposits of pleomorphic cells (Figure 2). Rare lesions include neurofibroma and chondroid syringoma. The microscopic smear of

neurofibroma showed loosely arranged clusters of spindle shaped cells with slender nuclei having comma shaped or fish hook like appearance (Figure 3). The cytological smear of chondroid syringoma showed benign clusters of round to oval epithelial cells and myoepithelial cells against dense fibrillary chondromyxoid stroma.

DISCUSSION

The axilla is a pyramidal compartment which contains many neurovascular structures, lymph nodes, fat and occasionally an axillary tail of breast. These axillary structures can give rise to palpable lumps which includes both neoplastic and non neoplastic lesions. Tumors which arise from axillary area ranges from benign to malignant. Both primary and secondary malignant lesions can be found in the axillary region. To detect these variable spectrum of axillary lumps at its early stage, FNAC is the most cheapest and reliable investigative technique available.

Table 1: Based on organ wise distribution

Organ	Cytological diagnosis	Number of cases
Soft Tisuue	Lipoma	36
	Neurofibroma	1
Skin	Epidermal inclusion cyst	2
	Chondroid syringoma	1
Ectopic breast	Unremarkable	2
	Benign breast lesion	4
	Ductal carcinoma	1
Lymphnode	Reactive lymphadenitis	33
	Tb lymphadenitis	10
	Pyogenic/suppurative lymphadenitis	2
	Metastasis	
	Associated with IDC breast	7
	IDC features not associated with breast carcinoma	1
	Squamous cell carcinoma	1
	Adenocarcinoma	1
	Malignant melanoma	1
	Hodgkin lymphoma	1
Nonhodgkin lymphoma	2	

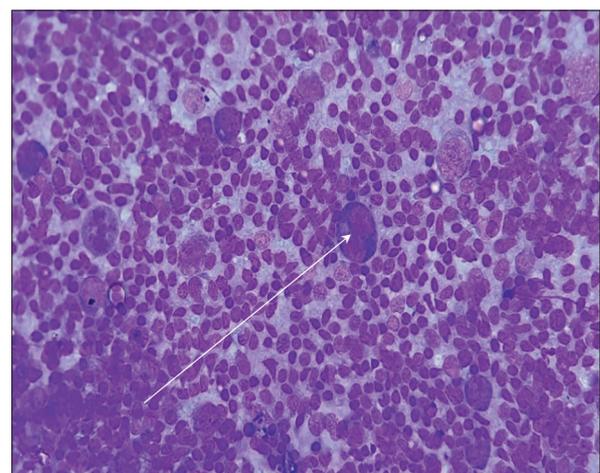


Figure 1: Hodgkin lymphoma-Picture shows single classic Reed Sternberg cell (arrow head) against a background of heterogenous population of WBCs

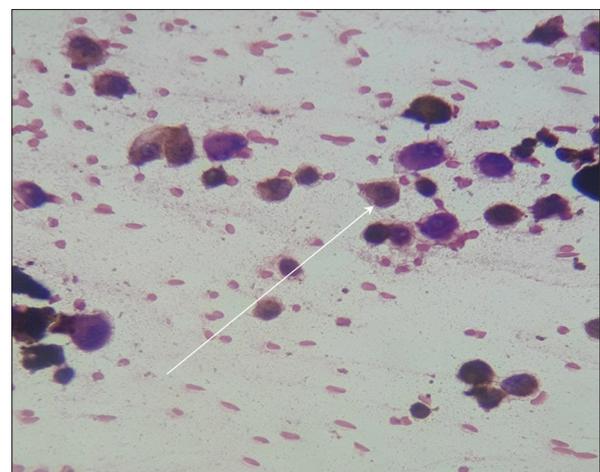


Figure 2: Metastatic deposits of malignant melanoma in lymph node

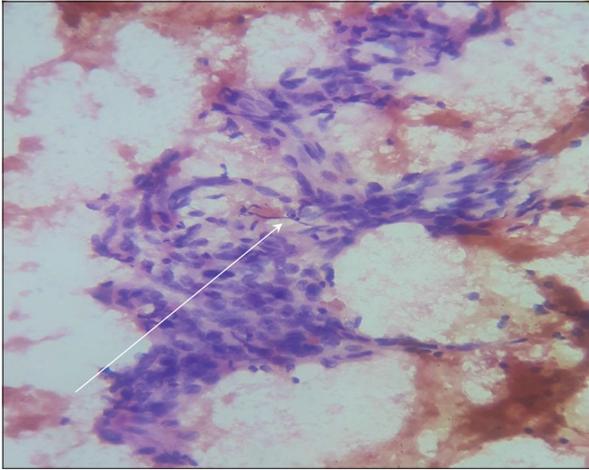


Figure 3: Neurofibroma- Picture showing loose clusters of spindle cells with moderate cytoplasm, oval elongated slender nuclei, and bland chromatin

In our study, a total of 110 cases were included. This study showed female predominance with female:male ratio being 3.07. Study by Gatphoh et al.,⁷ also had similar finding (ratio = 3.4). The predominant lesions found in our study were from lymphnode followed by soft tissue. The most common cytological findings found among axillary lymph nodes were reactive lymphadenitis. Lipoma was the most common cytological diagnosis among soft tissues. These findings were in concordance to the study done by Dey and Sinha⁸ whereas study by Bello and Omotara⁹ revealed soft tissue tumor (lipoma) being predominant lesions followed by axillary tail of breast.

The other cytomorphological patterns of lymphadenopathy include tubercular and acute suppurative lymphadenitis. The incidence of tubercular lymphadenitis had shown a declining trend in India during the last few years. However, it remains one of the leading causes of lymphadenitis because of low socioeconomic and immune status.

The neoplastic lesions found in our study accounts to about 55.45%. This finding is in concordance to study by Bello and Omotara⁹ and Gatphoh et al.,⁷ which is about 52.5% and 57%, respectively. Majority of them were metastatic deposits from breast carcinomas in concordance to study by Dey and Sinha.⁸ Other malignant cytological findings include metastatic deposits of squamous cell carcinoma, adenocarcinoma and malignant melanoma from an unknown origin. These secondary metastatic deposits of axillary lymph nodes were also reported by Beydoun et al.,¹⁰ Gatphoh et al.,⁷ and Anne and Pallapothu,¹¹ respectively. The rare primary malignant lesions encountered from axillary lymphnode include Hodgkin lymphoma and nonhodgkin lymphomas. These rare axillary lymphoma cases were reported earlier by Perre and Markman¹² and Ribas et al.¹³

As per previous studies, the prevalence of ectopic breast tissue in the axilla is 0.6–6%. Very few cases of Fibroadenoma in axillary Ectopic breast tissue had reported so far. The present study showed seven cases of ectopic breast lesions. Among them, four cases (3.6%) showed cytological features of benign breast disease. Dey and Sinha⁸ had also reported fibroadenoma of ectopic breasts which accounts to about 4% cases. No other congenital lesions were found in the present study. The rare congenital lesion reported earlier in the axillary region was cystic hygroma by Guner et al.¹⁴

Rare lesions encountered in the present study were one case each of neurofibroma and chondroid syringoma. Similarly, a single case of neurofibroma of brachial plexus was reported earlier by Mehta et al.,¹⁵ and chondroid syringoma in axilla by Maharjan et al.¹⁶

Limitations of the study

The patient selection criteria for the above study is arbitrary.

CONCLUSION

FNAC is an outpatient-based accurate, rapid procedure helps in timely diagnosis of various axillary lesions including clinically and radiologically ambiguous cases. It also helps to discriminate benign and malignant lesions with less chances of false negative results.

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SN- Concept and design of the study, reviewed slides, prepared first draft of manuscript; **GA-** Reviewed slides, interpreted results, reviewed the literature and manuscript preparation; **KB-** Coordination, results and interpretation, preparation of manuscript and revision of manuscript.

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