Original Article

Virchows node: An experience with liquid base cytology

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Abstract

Objectives: To evaluate the diagnostic utility of liquid base cytology(LBC) and conventional cytopreperatory techniques in fine needle aspiration of left supraclavicular lymphnode. **Materials and Methods:** This study was conducted over a period of one year in Pathology department of Safdarjung Hospital and Vardhman Mahavir Medical College on 64 cases of palpable left supraclavicular lymphnodes. The FNAC material was processed by both conventional and LBC method with relevant immunocytochemistry. **Results**: Out of 64 cases, four had insufficient material and could not be included in the study.61.6% had a benignetiology while 38.3 % were malignant. Among benign cases, 40.5% were Tubercular, 13.5%granulomatous, 21.6 % infective and 24.3% non - specific reactive lymphadenitis .Mean age of presentation of metastatic tumors was 62 years, whereas in case of tuberculous lymphadenitis it was 35 years. Females were more commonly affected than males with male female ratio of 1:1.4.FNA smears prepared by both LBC and conventional cytoprepratory techniques were evaluated and it was observed that in LBC smears obscuring elements, irregular spreading of smear, drying and crushing artifacts were removed thus providing better visualization of cells.However distortion of cell morphology , loss of background inflammation and tumor diathesis on LBC smearsmade a support of conventional cytology essential for diagnosis. **Conclusion**: Enlarged leftsupraclavicular lymph node often has some serious underlying pathology both in young adults and old patients. Our study highlights the importance of FNAC in the initial evaluation of enlarged left supraclavicular lymph nodes. LBC performed on FNA samples can be a useful adjunct to conventional cytology but should not be used as a sole method of diagnosis of Virchows node.

Keywords: Virchows node, conventional cytology, Liquid based cytology.

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INTRODUCTION

A variety of benign and malignant conditions can present as left supraclavicular lymphadenopathy and diagnosis on FNA have been well described in literature. It is often viewed with suspicion, as it can be the earliest sign of underlying malignancy of the thoracic, abdominal or the pelvic region.[1] However besides metastasis, a wide range of other conditions like reactive, infective, and primary neoplasm can also be the cause of palpable left supraclavicular lymph node.[2] Many studies have highlighted the importance of fine needle aspiration cytology (FNAC) in diagnosing enlarged lymph node with high sensitivity and specificity.[3,4,5,6] The present study is undertaken to know the disease pattern in left palpable supraclavicular lymph node using FNA and LBC cytomorphology with relevant immunocytochemistry .

MATERIALS AND METHODS

This study was conducted in Pathology Department of VardhmanMahavir Medical College and SJH by performing FNAC of palpable left supraclavicular lymph node during a period of one year (January 2015-December 2015).A total of 64 patients were taken. In all cases, FNA was done using a 21 gauge needle.Two passes were given and material obtained from first pass was suspended in Cytorich red preservative(BD Sure Path) in ratio of 1:3 and left as such for at least 1 h

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followed by concentration, where the preserved sample is centrifuged at 3000 rpm for 30 min. and processed for liquid base cytology (LBC). Samples preserved in cytorich Red was processed by automated BD Sure Path . In routine, two Pap stained smears were prepared. In suspected malignancy four slides were prepared, one was Pap stained by automated BD sure Path and other three were stored in cold acetone for immunocytochemistry. From the second pass minimum two smears were prepared by conventional technique. Out of them, one was stained by Giemsa and other was fixed for Pap or air dried for Zeil Nelson AFB staining in suspected cases of tuberculosis. Based on the clinical diagnosis2 -3 smears were fixed in cold acetone forimmunocytochemistry. In all the cases, routine Giemsa ,Pap and LBC smears and the relevant immunocytochemistry slides (if prepared) were studied and evaluated for adequacy ,cellularity, background, cellular morphology, architecture cohesiveness and nuclear details.

The representative conventional smears and LBC preparations were compared by a semi quantitative scoring system using several criteria.

Table 1[7]

Cytologic features	Score			
	0	1	2	3
Cellularity	Zero	Scanty	Adequate	Abundant
Background blood debris	Zero	Occasional	Good amount	Abundant
Informative background	Absent	Present	--	--
Monolayer	Absent	Occasional	Good amount	
Cell architecture	Non- recognized	Moderately recognized	Well recognized	
Nuclear details	Poor	Fair	Good	Excellent
Cytoplasmic details	Poor	Fair	Good	Excellent

Cytodiagnosis were grouped as non specific reactive lymphadenitis (9 cases), acute suppurative lymphadenitis (8 cases), tuberculosis (15 cases), granulomatous lymphadenitis (5 cases), lymphoma (total 3 cases of which 2cases were of Hodgkins lymphoma and 1caseof Non Hodgkins lymphoma), and metastatic lymphadenopathy(20 cases). In cases of metastatic lymphadenopathy, attempt was made to find the primary site of cancer. Of 20 cases, 10were of Squamous cell carcinoma(SCC) of oral cavity,4 of adenocarcinoma GI tract, 2 adenocarcinoma lung, 2 ductal carcinoma breast, 1 Medullary carcinoma thyroid and 1 of metastatic glioblastoma. The lesions were categorised according to age, and gender. The cytomorphology features on conventional smears and LBC smears were studied.

RESULT

This study was conducted over a period of one year in Pathology department of VMMC andSafdarjungHospital. During this period 64 casesof leftsupraclavicular lymphnode came for FNA cytology.Out of them,4 cases could not be included in the study as material was insufficient. In remaining 60 cases, a definitive diagnosis was possible. Mean age of presentation of metastatic tumor was 62 years, whereas in case of tuberculous lymphadenitis it was 35 years. Females were more commonly affected than males with male female ratio of 1:1.4.

The disease pattern ranged from 61.6% benign aetiology while 38.3 % were malignant. Among benign cases, 40.5% were tubercular, 13.5% granulomatous, 21.6 %infective and24.3% non - specific reactive lymphadenitis.

In our study it was observed that LBC technique as per its design overcame the limitations of conventional cytological preparations such as obscuring elements, irregular spreading of smear, drying and crushing artifacts[7] which improves the specimen quality and adequacy, thus lowering the unsatisfactory rates. In general, there was monolayering, better cellular preservation, less cell overlapping and elimination of obscuring elements (blood, inflammatory cells and cellular debris) in comparison to conventional smears.[7,8]. Also time required for screening was less as compared to conventional smears.

However LBC had some limitations like, alterations in architecture and cellular morphology as well as loss of informative background (stromal cells and extracellular material) and a higher cost[7]. Like in case of abscess(acute suppurative lymphadenitis), the conventional smear showed acute inflammatory exudate , necrotic derbis and acute and chronic inflammatory cells while in LBC, abscess was difficult to interpret due to cleaner background, loss of necrotic debris and reduced number of inflammatory cells. In tuberculouslymphadenitis, epithelioid cells were appreciated in both conventional and LBC smears .However the classical granuloma and necrosis were missing in LBC smears. Further AFB staining for tubercular bacilli could not be performed on LBC smears, which was a major limitation.

In Hodgkin's disease, Reed–Sternberg cells stood out very well on LBC smears but the mixed polymorphous background was significantly reduced. Tumor cells were CD30+, and CD15+. In diagnosis of Non – Hodgkins lymphoma, LBC did not added any advantage over conventional smear except crisp immunocytochemistry.

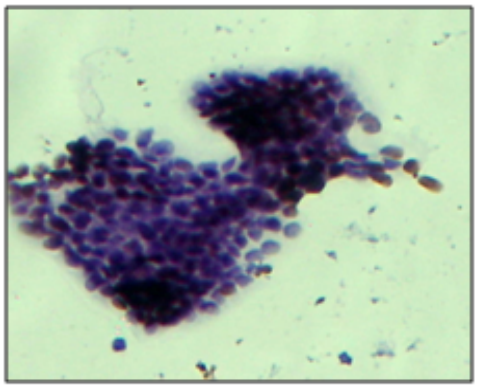

Figure 1a

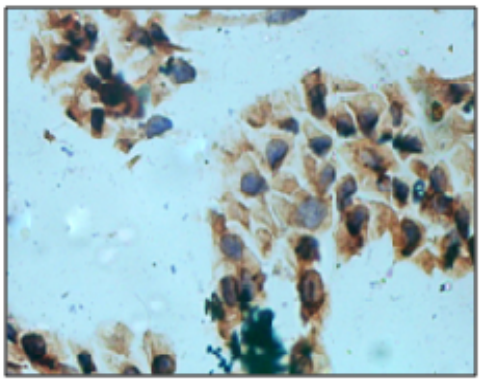

Figure 1b

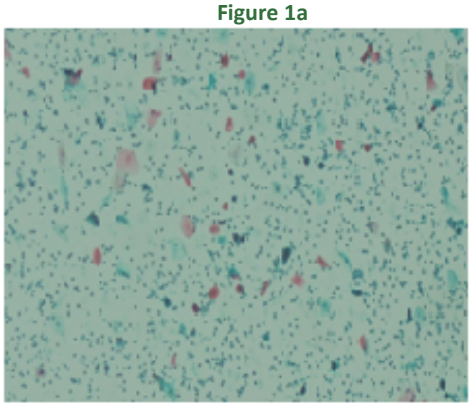

Figure 2a

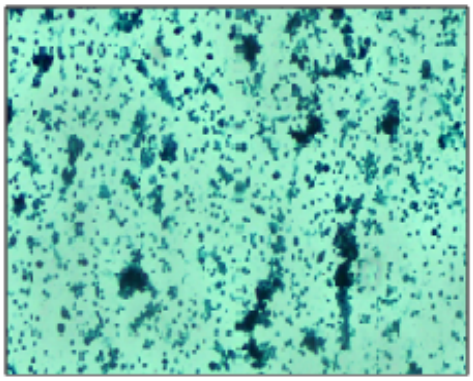

Figure 2b

Legend

Fig 1a and b: LBC, Metastatic adenocarcinoma lung showing TTF-1 immunostaining

Fig. 2a and b: LBC, metastatic SCC showing CK immunostaining

Metastatic tumours had added advantage of cleaner background, well preserved cell architecture, better nuclear detail and strong supportive immunocytochemistry. In our study LBC was very useful in cystic degeneration of squamous cell carcinoma(SCC) and SCC associated with acute inflammation where the concentration method and cleaner background made search for tumour cells easy(Fig2a and b). However the cleaner background was a disadvantage in case of mucin secreting adenocarcinoma of Gastrointestinal region due to loss of mucin. In case of metastatic glioblastoma LBC was highly useful as there were only few malignant cells in dense inflammatory background in conventional cytology while in LBC, a cleaner background and crisp positive immunocytochemistry for GFAP and synaptophysin(Fig3a and b) made diagnosis easier. Metastasis from adenocarcinoma lung was also easier in LBC with support of positive TTF1 immunocytochemistry(Fig 1a and b).In case of medullary carcinoma of thyroid, in LBC smears amyloid was not seen but immunocytochemical staining for calcitonin was positive in the tumor cells.[7, 8]

However in all the cases of metastatic malignancies, the cells showed shrinkage and spindling ,due to which the classical shape of cells like polygonal of squamous ,cuboidal to columnar of adenocarcinoma were distorted .The nuclear details were well preserved ,although the nucleus seemed to be falsely hyperchromatic with prominent nucleoli. Further the cell clusters were fragmented and smaller with three D configurational arrangement. The reduced or lost background material was advantageous in some cases where there were only few malignant cells in fluid/hemorrhagic or inflammatory background. However loss of mucin and tumour diathesis background was a disadvantage while interpreting LBC. Thus conventional cytology smears had to be seen for interpreting cell morphology and background details. Thus LBC is superior to conventional cytology with regard to clear background, monolayer cell preparation and cell preservation. It is easier and less time consuming

to screen and interpret because the cells are limited to smaller areas on clear backgrounds, with excellent cellular preservation. However it should not be used as the sole method of diagnosis of Virchows node but could be useful as an adjunct to the conventional cytology and familiarity with artifacts is essential to avoid misinterpretations.[7,9]

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