RESEARCH ARTICLE

REAL TIME VISUALIZATION OF MEDIASTINAL LYMPH NODES WHILE DOING ENDOBRONCHIALULTRASOUND GUIDED TRANS BRONCHIAL NEEDLE ASPIRATION (EBUS-TBNA) USING CONVEX PROBE GIVES BETTER DIAGNOSTIC YIELD THAN CONVENTIONAL TBNA AND MEDIASTINOSCOPY:

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Manuscript Info

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Abstract

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Introduction: Real time visualisation of mediastinal lymph nodes makes it easy to "Hit & Run" with convex probe while doing Endobronchial Ultrasound guided Trans Bronchial Needle Aspiration (CP-EBUS-TBNA) whichgives better safety profile, diagnostic yield and is gradually replacingConventional Trans Bronchial Needle Aspiration(C-TBNA) and Mediastinoscopy. We analysed retrospectively the diagnostic yield of EBUS-TBNA done at Asian Institute of Medical Sciences, a tertiary hospital at Faridabad in Haryana.

Materials and Methods: We pulled in the dataof EBUS-TBNA done on patients with Mediastinal lymphadenopathy short axis nodal diameter >0.5 cm, on computed tomography of thorax from Nov 2016 to May 2019. The procedures were done under conscious sedation by multiple operators who had done 20 EBUS-TBNA independently. A sample that was positive for AFB smears/malignant cells or granuloma was considered to be diagnostic.

Results: The study included 250 patients (156 males) with mean age 49.6 years. EBUS-TBNA detected 427enlarged mediastinal nodes with average diameter of 14.45±8.56 mm. A total of 376 lesions were sampled of which subcarinal lymph node was the most common station (86.4%) followed by Pre & Paratracheal (11.6 %). Average of 1.5 lymph nodes was sampled per patient with 3 passes per lymph node. The procedure had a diagnostic yield of 86 %. Majority of the patients were diagnosed with Granulomatous pathology (44.8 %): Sarcoidosis (24 %)followed by Tuberculosis (20 %). Malignancy was diagnosed in 12 % of patients of which non small cell cancer constituted the major diagnosis(50%). No complication was observed.

Conclusion: EBUS- TBNA is very safe procedure with consistent good diagnostic yieldwith multiple operators beyond learning curves than for C- TBNA which require extensive training and expertise of the operator besides size and location of the lesion, though the availability due tohigher costs limits its usage.

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Introduction:-

Mediastinal lymphadenopathy raises a diagnostic dilemma among the treating physicians. Many of it's differentials includingTuberculosis, Sarcoidosis& Malignancy are the most common conditions prevalent in Inda. With EBUS we can access mediastinal and hilar lymph nodes that makes it an essential complimentary test along with CT and PET scan. EBUS- TBNA can be performed as an outpatient procedure under local anaesthesia and conscious sedation. The aim of the study was to assess the diagnostic yield of EBUS-TBNA in patients with Computed Tomography (CT) proven mediastinal adenopathy from a tertiary care centre in Northern India.

Materials and Methods:-

This was a retrospective study where in cytopathology reports of EBUS-TBNA done on patients who had shown mediastinal lymphadenopathyon CT –thoraxon evaluationafter detailed history & physical examinationfrom Nov 2016 to May 2019 were taken in to account with other reportsincluding Serum ACE level, Mantoux test, BAL Cytopathology, TBLB& TBNA -histopathology, PET-scan at Department of Pulmonary Medicine, Asian Institute of Medical Sciences, Faridabad.

Short axis nodal diameter on CT chest was >8 mmwere considered enlarged, and classified using the Study International Association for the of Lung Cancer (IASLC). EBUS-TBNA was performed by multiple operators who were doing EBUS –TBNA independently beyond their learning curves. Standard protocols were observed for case preparation, during and post procedure. CP-EBUS: BF-UC 180Fwas used with the EU-ME2 Ultrasound system; EVIS EXERA II Series CV180 Video Processor; Olympus Medical Systems, Tokyo, Japan). The location, shape, and structure of the lesions were examined with ultrasound. The best view of the node was identified on EBUS and dimension of the lymph nodes were documented by measuring the short axis diameter of the nodes. TBNA was done under real-time ultrasound guidance using a dedicated, disposable, 22-gauge, Vizishot needle (NA-201SX-4022 Olympus Medical Systems, Singapore). A single needle was used for accessing target stations. A suction syringe technique was used wherein the inner lumen of the fine needle was first occluded with a metal stylet, which was removed after the needle entered the target LN. Once the stylet was withdrawn, a 20-ml syringe was applied to the needle for providing suction. The needle was moved back and forth 15-20 times and finally retracted back within the sheath and the needle assembly was unlocked and withdrawn from the EBUS Scope for cytological assessment. Between 3 to 5 passes were taken from each nodal station with the sequence of assessment being N3 followed by N2 and N1 where applicable. The focus was mainly towards diagnosis unless asked for staging. Rapid on-site evaluation of samples were not done.

All aspirates obtained were evaluated for:
1. Cytopathological examination (granulomas, epitheloid, necrosis, and tumor cells – further sent for of tumors)
2. typing Mycobacterial smears, Gene XpertMTB Rif / CBNAAT and culturein normal saline.

Outcome were decided based on the results obtained in the cytopathology or micobiological analysis. All patients were observed for 2-3hrs after procedure and explained about the possible post procedure experiences like blood tinged sputum, fever etc. and to review in hospital emergency in case of chest pain and breathlessness.

Sarcoidosis was diagnosed in cases with compact epithelioid cell granuloma without necrosis and negative Acid-Fast Bacilli (AFB) smears with compatible clinicoradiological features. Smears were considered diagnostic of Tuberculosis (TB) in the presence of extensive necrotizing granulomas and/or demonstration of AFB or positive MTB PCR. Malignancy was diagnosed based on the representative samples containing malignant cells.

Statistical Analysis:

Microsoft Office Excel 2013 was used to record data from different sources like Cytopathology, Microbiology, Radiology, and Biochemistry. Diagnostic yield was computed using appropriate equations.

Results:-

The study included 250 patients (156 males) with mean age 49.6 years.

Table 1:- Demographic Characteristic.

Age (mean)	49.6 years

Males	156 (62.4%)
Females	94 (37.6%)
Clinical suspicion	
Infection/Granulomatous disorder	225
Malignancy	25

EBUS-TBNA detected 427 enlarged mediastinal nodes with average diameter of 14.45±8.56 mm. A total of 376 lesions were sampled of which subcarinal lymph node was the most common station (86.4%) followed by Pre & Paratracheal (11.6 %).

Table 2:- Bronchoscopic Characteristics.

Enlarged Lymp Node	427
Number of lymph nodes sampled	376
Subcarinal lymph node	217 (57.7%)
Pre & Paratracheal	98 (26%)
Hilar	19 (5 %)
Others	42(11 %)
Average number of LN sampled per patient	1.5
Average number of passes per LN	3

Average of 1.5 lymph nodes was sampled per patient with 3 passes per lymph node. The procedure had a diagnostic yield of 86 %. Majority of the patients were diagnosed with Granulomatous pathology (44.8 %): Sarcoidosis (24 %) followed by Tuberculosis (20 %). Malignancy was diagnosed in 12 % of patients of which non small cell cancer constituted the major diagnosis (50%). No complication was observed.

Table 3:- Diagnosis obtained through EBUS-TBNA.

Malignant	
Non small cell carcinoma	20
Small cell carcinoma	4
Poorly differentiated tumor	3
Metastatic cancer	2
Lymphoproliferative disorder	1
Non Malignant	
Tuberculosis	50
Sarcoidosis	62
Reactive lymph node	73
Negative for malignancy/TB/sarcoidosis	35

Conclusion:-
EBUS- TBNA is very safe procedure with consistent good diagnostic yield with multiple operators beyond learning curves than for C- TBNA which require extensive training and expertise of the operator besides size and location of the lesion, though the availability due to higher costs limits its usage.

Conflicts:
None

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