

Diagnostic Yield of Conventional Trans-Bronchial Needle Aspiration (TBNA) for Subcarinal and Right Paratracheal Nodes

Muhammad Ashraf, Muhammad Hussain and Kamran Khalid Chima

ABSTRACT

Objective: to observe the diagnostic yield of conventional TBNA with EBUS-TBNA for right paratracheal and subcarinal nodes.

Study Design: Observational / descriptive study.

Place and Duration of study: This Study was conducted in Pulmonology Department of Services Institute of Medical Sciences (SIMS) Lahore from January 2013 to March 2015 after approval from ethical review committee.

Materials and Methods: We prospectively enrolled patients with right Mediastinal and sub carinal lymph nodes for bronchoscopy and TBNA. Patients of both gender with significant (>1.5 cm) subcarinal and right paratracheal nodes or mass lesions were included in the study. All patients had conventional TBNA done with Smooth shot needle #19 F via video bronchoscope under light sedation. Adequacy of the sample and definitive diagnosis either by Histopathology or cytology was noted.

Results: Sixty patients including 27 male (45%) and 33 (55%) female had TBNA for Subcarinal or paratracheal nodes or mass lesions. Mean age was 50.31 ± 14.3 . Fifty four (90%) patients had the diagnosis on histopathology, cytology or tissue culture while 6 (10%) patients had non-diagnostic/inadequate samples. Leading diagnosis was Sarcoidosis 24 (44.4%) followed by NSCCA 11(20.3%), Tuberculosis 10 (18.5%), SCCA 7 (12.9%), and Endocrine Tumor 2 (3.7%). Minor hemorrhage 6 (10 %) was managed by topical adrenaline.

Conclusion: Conventional TBNA is useful easily available, cheap and safe diagnostic tool in patients with Subcarinal and right Para-tracheal lymph nodes/mass lesions of >1.5 cm size.

Key Words: Bronchoscopy, TBNA=Trans-bronchial Needle Aspiration, EBUS-TBNA =Ultrasound guided Trans-bronchial Needle Aspiration.

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INTRODUCTION

Pulmonary malignancies are 2nd most common causes of death among all cancers. Pulmonary masses can be Parenchymal, Pleural, Endobronchial or Mediastinal in origin.¹ Mediastinal masses can be primary or metastatic malignancies, lymphoma, tuberculosis or sarcoidosis. Mediastinal lymph nodes are common problem and a diagnostic dilemma in routine clinical practice. Work up for most of the causes needs tissue diagnosis. Mediastinoscopy, open thoracotomy and VATS biopsy are the mainstays of obtaining tissue with multiple complications and heavy procedural cost.²

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CT guided biopsy is another option in selected cases to obtain tissue. Bronchoscopic transbronchial biopsies are easily performed, well tolerated and associated with minimal complications. Endobronchial ultrasound guided-Fine Needle Aspiration (EBUS-FNA) and conventional TBNA have been used for the mediastinal masses and lymph node biopsies for many years. There is significant variation in between the diagnostic yields reported by different authors.³ No doubt ROS (Rapid Onsite cytological analysis) and ultrasound guidance have improved the yield significantly in many studies⁴ but its availability, expertise, and cost still make it difficult option in developing countries.

TBNA (Trans-Bronchial Needle Aspiration) by conventional methods is still a handy tool. As the procedure is performed blindly and depends on the nodal size,⁵ location of the nodes and underlying etiology. Trisolini and colleagues found that EBUS-FNA is superior to conventional TBNA in nodes <1 cm and nodes in difficult to approach positions⁶ To check whether specific locations of nodes and significant size can compete EBUS-FNA, we performed the study and calculated the diagnostic yield. It will not only improve the diagnosis because of its availability but also reduce the cost of procedure.

MATERIALS AND METHODS

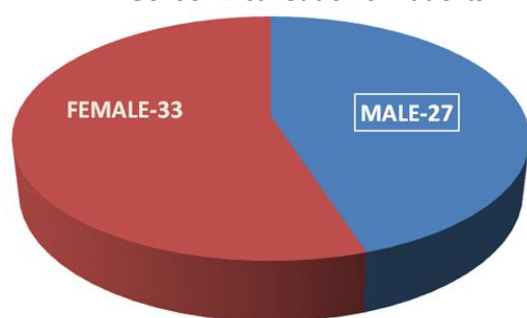
Study was performed in Pulmonology department of Services Institute of Medical Sciences (SIMS) / Services Hospital Lahore from January 2013 to March 2015 after approval from ethical review committee. The patients of both gender with Sub-carinal or right Paratracheal nodes or masses with significant size (>1.5 cm) were included in the study. Patients were briefed about the procedure and informed consent was taken. Patient with young age <14 years, nodal masses in other places (4 L, 10 R/L, 11 R/L), smaller size (<1.5 cm) and failure to consent were excluded from the study.

All patients underwent Bronchoscopy under light sedation with Olympus video-bronchoscope (6c. 260) and conventional TBNA was performed with Smooth shot needle #19 F for core biopsy and aspiration. Bronchoalveolar lavage, endobronchial or trans-bronchial biopsies were also performed in selected cases. Aspiration Samples were fixed with alcohol and core tissue was preserved in formalin (for histopathology) or saline (for culture). Adequacy of sample, complications and definitive diagnosis either by Histopathology or cytology was noted. All data was recorded on Microsoft Excel and then tabulated manually. The primary outcome was to obtain a tissue diagnosis. Diagnostic yield was calculated and compared with literature.

RESULTS

Baseline demographics are shown in Graph I. Sixty patients including 27 male (45%) and 33 (55%) female had TBNA for Subcarinal or Para-tracheal nodes or mass lesions. Mean age was 50.31 ± 14.3 . Fifty four (90%) patients had the diagnosis on histopathology, cytology or tissue culture while 6 (10%) patients had non-diagnostic/inadequate samples and required other interventional modalities for the diagnosis.

Gender Distribution of Patients



Pie Chart 1: Showing the gender distribution of the registered patients.

The mean size of lymph nodes was 2.1 cm and Subcarinal Lymph nodes were most common (Graph 2). Most common diagnosis was Sarcoidosis 24 (44.4%) followed by NSCCA 11 (20.3%), Tuberculosis 10 (18.5%), SCCA 7 (12.9%), Endocrine Tumor 2

(3.7%). The only complication was minor hemorrhage that was managed by topical adrenaline in 6 (10%) cases.

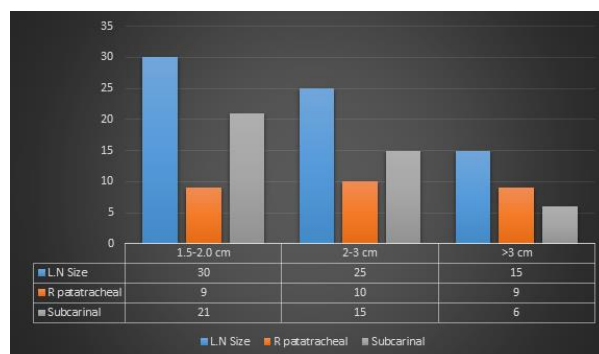


Chart No.1: Frequency of Lymph node location and size. The majority of the number was 1.5-2.0 cm and Subcarinal.

DISCUSSION

To our Knowledge, this is first study of conventional TBNA in Pakistan. Mediastinal nodal enlargements need tissue diagnosis in most of the cases. Mediastinoscopy, mediastinotomy, thoracotomy and VATS (Video-assisted thoracoscopic surgery) used to be the mainstay of obtaining tissue for diagnosis. Minimally invasive procedures for tissue diagnosis are conventional TBNA and EBUS-TBNA.⁷ EBUS-TBNA needs expensive equipments which is not available everywhere in Pakistan, in addition, it requires special expertise; conventional TBNA rather does not need such special expertise and can be used wherever bronchoscopy is done⁸.

Though, USG guidance increases the yield⁹ but it is scarcely available in Pakistan and costly procedure. EBUS-TBNA is done under deep sedation or general anesthesia and needs a comprehensive teamwork. Although Conventional TBNA is a blindly performed procedure and threatens the risk of bleeding¹⁰ but it can be done under light sedation and is cost effective. We have found that it has the good diagnostic yield (90%) in selective group of patients, i.e. right paratracheal and subcarinal with significant adenopathy. Flex Herth and colleague found that conventional TBNA had comparable yield with EBUS-TBNA (74% vs 86%) for the Sub-carinal lymph nodes.⁶ The yield of EBUS-TBNA was significantly higher for other nodal stations. Almost same results with yield of 60-90% have been reported by different authors for lymph nodes stations 4 R and 7, 7a (subcarinal).⁶⁻¹¹

Sampling 4 R, 7, 7a showed very good results and statistically significant diagnostic yield that is comparable to the overall yield of EUS - TBNA for all nodal stations¹². Diagnostic yield for other stations like hilar, 4 L and size <1.5 cm was low and ultrasound guidance is the best option of tissue sampling; were excluded these nodes from the study.

The rate of complication was quite low and minor hemorrhage managed with topical adrenaline was reported in 6(10%) patients. The possibility of minimal hemorrhage in the mediastinum is there and required follow-up CT Chest of every patient and it was not performed. However, on follow up observation, none of the patients developed chest pain, fever and hemodynamic instability; an indirect evidence against the mediastinal hemorrhages or mediastinitis.

This study allows us to comment on diagnostic yield and not diagnostic sensitivity because all the patients did not undergo surgery. This study only offers statistical data of a commonly available, cost effective procedure and can be equally helpful for diagnosis of some groups of Mediastinal lymph nodes who otherwise have to undergo major surgical procedures. A larger comparative study is needed to see the diagnostic sensitivity of this cost effective procedure.

CONCLUSION

Conventional TBNA is cost effective, easily available, safe and cheap diagnostic tool for patients with 4 R, 7, 7a Nodal stations or masses.

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Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Alberts W. There Are Major Problems with the American College of Chest Physicians Second Lung Cancer Guidelines: *Chest* 2008;133(4):1050-1051.
2. Detterbeck F, Jantz M, Wallace M, Vansteenkiste J, Silvestri G. Invasive Mediastinal Staging of Lung Cancer. *Chest* 2007;132(3):202S-220S.
3. Ernst A, Anantham D, Eberhardt R, Krasnik M, Herth F. Diagnosis of Mediastinal Adenopathy—Real-Time Endobronchial Ultrasound Guided Needle Aspiration versus Mediastinoscopy. *J Thoracic Oncol* 2008;3(6):577-582.
4. Trisolini R, Cancellieri A, Tinelli C, Paioli D, Scudeller L, Casadei G, et al. Rapid On-site Evaluation of Transbronchial Aspirates in the Diagnosis of Hilar and Mediastinal Adenopathy. *Chest* 2011; 139(2):395-401.
5. Patel NM, Pohlman A, Husain A, Noth I, Hall JB, Kress JP. Conventional transbronchial needle aspiration decreases the rate of surgical sampling of intrathoracic lymphadenopathy. *Chest* 2007;131(3):773-8.
6. Trisolini R, Patelli M, Ceron L, Gasparini S. Transbronchial Needle Aspiration. *Monaldi Arch Chest Dis* 2011; 75:44-49.
7. Herth F, Becker HD, Ernst A. Conventional vs Endobronchial Ultrasound-Guided Trans-bronchial Needle Aspiration. *Chest* 2004;125:322-325.
8. Wang KP, Fuenning C, Johns CJ, Terry PB. Flexible transbronchial needle aspiration for the diagnosis of sarcoidosis. *Ann Otol Rhinol Laryngol* 1989; 98 (4-1): 298 - 300.
9. Trisolini R, Tinelli C, Cancellieri A, Paioli D, Alifano M, Boaron M, et al. Transbronchial needle aspiration in sarcoidosis: Yield and predictors of a positive aspirate. *J Thoracic and Cardiovascular Surg* 2008; 135(4):837-842.
10. Oki M, Saka H, Kitagawa C, Tanaka S, Shimokata T, Kawata Y, et al. Real-time endobronchial ultrasound-guided transbronchial needle aspiration is useful for diagnosing sarcoidosis. *Respirol* 2007; 12(6):863-868.
11. Trisolini R, Agli L, Cancellieri A, Poletti V, Tinelli C, Baruzzi G, et al. The Value of Flexible Transbronchial Needle Aspiration in the Diagnosis of Stage I Sarcoidosis. *Chest* 2003;124(6):2126-2130.
12. Sharafkhaneh A, Baaklini W, Gorin AB, Green L. Yield of transbronchial needle aspiration in diagnosis of mediastinal lesions. *Chest* 2003;124(6):2131-5.