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Book Review

Endoscopic Ultrasound-Guided Transbronchial Needle Aspiration (EBUS-TBNA): A Practical Approach

Editors: S.E. Monaco , W.E. Khalbuss, L. Pantanowitz, Pitts burgh; Published by: S Karger AG, Switzerland; 2014; Hard Cover; Pages: XII + 136 pages, 172 figures (153 in colour), 38 tables; Price: (Hard cover) CHF128/EUR107/ USD150, (Online) CHF154/EUR128/USD181; ISBN 978-3-318-02396-1; e-ISBN 978-3-318-02397-8

The diagnosis of mediastimal lesions by endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is a novel application utilising fine needle aspiration. Evaluation of these with EBUS-TBNA is essential for answering important questions that are important for determining the next step in patient management especially having mediastinal and/or lung lesions. Although yield of tissue with EBUS-TBNA is small, yet it is important to understand how to interpret these specimens and implications of histopathology result on clinical decision-making. This book details clinical perspective of the procedure, technical aspects, and the cytomorphology of common and uncommon entities in addition to challenges and diagnostic pitfalls. There are 13 chapters and each chapter provides summary of highlights and diagnostic difficulties and challenges in multitude of full-colour high resolution images and has key references to the current literature in the field as well as quick reference tables and informative figures highlighting salient features. Chapter 1 introduces the subject of EBUS-TBNA to the readers. Highlights of this chapter include diagnosis and staging of lung cancer in tissue sample obtained through minimally invasive technique. It reassures that the technique is safe, cost-effective, utilises real-time image guidance and procures high-yield specimens. EBUS-TBNA is helpful in patients who are high risk candidates for surgery or who have pathological process that does not require surgery (lymphoma or infection). This chapter provides an account of diagnostic difficulties and challenges of this technique as it requires a greater degree of expertise and experience and it may not be universally available and can not be used to access all mediastinal lymph nodes. Samples obtained thorough this technique may have bronchial contamination and may yield no diagnostic results that require additional sampling. The chapter discusses low complication (bleeding, infection, pneumomediastinum and pneumothorax). This chapter highlights diagnostic difficulties for cytology due to variety of reasons including bronchial contamination, unfamiliarity with these specimens and cytology mimics. The chapter also emphasises challenge of implementation of EBUS-TBNA services.

Chapter 2 provides comparisons of EBUS-TBNA with other diagnostic modalities. Figure 1 of this chapter provides state-of-the-art schematic drawing that summarises the International Association for the Study of Lung Cancer (IASLC) LN map and various approaches. It provides idea of accessibility of diagnostic lymphnodes (superior mediastinal lymph nodes, aortic lymph nodes, inferior mediastinal lymph nodes and N1 lymph nodes) by three procedures namely EBUS, EUS and mediastinoscopy.

Chapter 3 reviews thoracic and mediastinal anatomy in context of EBUS-TBNA, as knowledge of anatomy is crucial to the success of sampling tissue for cytology diagnosis.

Chapter 4 describes technical aspects of EBUS-TBNA procedure. Chapter's highlights include level 7 (subcarinal) lymph nodes as the best site for sampling, difficulty in paratracheal lymph node sampling and useful tips for successful sampling. This chapter also provides useful tips to several difficulties such as inadequate sampling, mis-identification of lymph node, fibrotic lymph nodes and necrotic lymph node, confounding of cytopathology interpretation due to bronchial contamination interpretation due to bleeding in patients on anticoagulants, appropriately identifying a vascular window. Table 2 of this chapter provides useful recommendation for optimising EBUS-TBNA procedure.

Chapter 5 describes indications and diagnostic performance of EBUS-TBNA. Three tables of this chapter beautifully summarise indication, sensitivity and specificity (in select studies) and cause of false-positive (rare) and false-negative (common) diagnoses.

Chapter 6 of this book details specimen collection and processing and emphasises this aspect (specimen collection, triage and processing) to be a cardinal component of the success of EBUS-TBNA procedure. It also provides importance of rapid-on-site-evaluation (ROSE) in EBUS-TBNA. Figures 1 and 2 of this chapter provide a good concept about mobile cart for EBUS-TBNA cases, and a team approach to the success of EBUS-TBNA.

Chapter 7 describes practical approach to cytological evaluation and adequacy assessment in EBUS-TBNA. All six tables provide useful summary of points to increase the diagnostic yied from EBUS-TBNA. This chapter has high quality figures.

Chapter 8 summarises information on normal and non-neoplastic components and emphasises the need to recognise normal components in order to avoid an over diagnosis or mis-diagnosis in the specimens. The chapter has 24 high quality cytopathology figures.

Chapter 9 highlights description of pulmonary epithelial neoplasms. Lung cancer is the most frequent

cause of a positive EBUS-TBNA with non-small-cell lung cancer (NSCLC) being the most common (70%). This chapter nicely describes cytological features of small-cell carcinoma which stains positively for synaptophysin, thyroid transcription factor 1 (TTF1) and CD56 and have a high Ki 67 proliferation index. Table 1 provides WHO, 2004 classification and Table 2 compares WHO and IASLC/ATS/ERS classifications for small biopsies/cytology. Table 3 provides important information on immune staining pattern and molecular testing for subtypes of NSCLC: adenocarcinoma (ADC), squamous cell carcinoma (SQCC), large cell neuroendocrine carcinoma (LCNEC) and adeno-squamous carcinoma. The chapter provides relevant information on sequencing for EGFR, KRAS, BRAF and PI3Kinase, FISH testing for ALK and FGFR1. There are 31 high-quality figures that provide important description on cytomorphology and immunocytochemical staining of various pulmonary epithelial neoplasms.

Chapter 10 focuses on non-pulmonary-metastatic (breast, prostate, colon, uroepithelial, renal, thyroid and ovarian) carcinoma which is less common than metastatic pulmonary carcinoma. Table 1 provides useful information on CK7, CK20 staining and common site-specific immunocytochemical markers on EBUS-TBNA samples. Table 2 of this chapter provides important information on the origin of squamous cell carcinoma by human papillomavirus (HPV)-related status. The chapter has 14 high quality figures.

Chapter 11 describes rare non-epithelial neoplasms that are encountered in EBUS-TBNA specimens. These include non-Hodgkin's lymphoma, Hodgkin's lymphoma, myeloid sarcoma, plasma cell neoplasms, dendritic cell tumours, mesenchymal tumours, germ cell tumours, melanoma and mesothelioma. This chapter emphasises about obtaining sufficient material and triaging the specimen for ancillary studies.

Chapter 12 of this book focuses on thymic lesions and neoplasms since these are important in the differential diagnosis of any anterior mediastinal mass. The chapter highlights that there are limited reports that have documented the role and accuracy of EBUS-TBNA for diagnosing thymic tumours. Table 4 of this chapter details important information on immune staining profile of thymoma.

Chapter 13 summarises important information regarding specimen contamination, presence of background material and artifacts. Description of this chapter provides important information to cytopathologist and awareness of these limitation and pitfalls is crucial in order to accurately and confidently make diagnoses using EBUS-TBNA.

This book should serve as a reference book for pathologists, cytopathologists, cytotechnologists, pulmonologists, thoracic surgeons and other clinicians and trainees who perform EBUS-TBNA.

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