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Diagnosis of lung cancer

Advances in the diagnosis of lung cancer: contribution of molecular biology to bronchoscopic diagnosis

Authors: Maldonado F, Jett JR

Reference: Curr Opin Pulm Med 2010 Feb 18; Epub ahead of print; doi: 10.1097/MCP.0b013e328337f938

URL: http://journals.lww.com/co-pulmonarymedicine/Abstract/publishahead/
Advances_in_the_diagnosis_of_lung_cancer .99898.aspx

Comment: Recent data supports the use of advanced molecular techniques as an adjunct to conventional examination of bronchoscopy specimens for early diagnosis and lung cancer screening, to facilitate accurate histological diagnosis using immunohistochemistry markers, as well as to prognosticate and predict responses to targeted and conventional chemotherapeutic agents. This is a review of molecular biology techniques that are increasingly applied to biopsy specimens obtained by bronchoscopy. Although these techniques have not entered the clinical practice arena, it is likely that they will become complementary to conventional morphological examinations to allow for individualized therapy.
Early diagnosis of lung cancer

Authors: Yasufuku K


URL: http://www.chestmed.theclinics.com/article/S0272-5231(09)00080-X/fulltext

Comment: Central squamous cell carcinoma of the airways develops through multiple stages from squamous metaplasia to dysplasia, carcinoma in situ (CIS) and invasive cancer. It would therefore be ideal to detect and treat pre-invasive bronchial lesions before they progress to invasive cancer, and efforts have been made in the development of new mucosal imaging techniques. This review focuses on different bronchoscopic imaging techniques, including autofluorescence bronchoscopy, high magnification bronchovideoscopy, narrow band imaging and optical coherence tomography.

Color fluorescence ratio for detection of bronchial dysplasia and carcinoma in situ

Authors: Lee P et al.


URL: http://clincancerres.aacrjournals.org/content/15/14/4700.long

Comment: Autofluorescence bronchoscopy is more sensitive than conventional bronchoscopy for early detection of airway mucosal lesions. Decreased specificity can lead to excessive biopsies and increased procedural time. Onco-LIFE, a device that combines fluorescence and reflectance imaging, allows numerical representation by expressing the red-to-green ratio (R/G ratio) within a region of interest. A R/G ratio of 0.54 conferred 85% sensitivity and 80% specificity for the detection of high-grade and moderate dysplasia. In a validation study, kappa measurements showed good agreement of R/G ratios with visual scores and pathology. The colour fluorescence ratio can provide objective guidance for the bronchoscopist in selecting sites for biopsy.

Staging of the mediastinum

The utility of sonographic features during EBUS-TBNA for lymph node staging in patients with lung cancer - A Standard EBUS Image Classification System

Authors: Fujiwara T et al.

Reference: Chest 2010 April 9; Epub ahead of print; doi: 10.1378/chest.09-2006

URL: http://chestjournal.chestpubs.org/content/early/2010/04/08/chest.09-2006.long

Comment: Endobronchial ultrasound guided transbronchial needle aspiration (EBUS-TBNA) is a minimally invasive procedure with a high yield for lymph node staging of lung cancer. This study assessed sonographic features of lymph nodes during EBUS-TBNA for the prediction of metastases in patients with lung cancer. Multivariate analysis revealed that round shape, distinct margins, heterogenous echogenicity and the presence of coagulation necrosis sign were independent predictive factors for metastasis. Sonographic features of lymph nodes based on the new EBUS imaging classification may be helpful in the prediction of metastatic lymph nodes during EBUS-TBNA.
Endobronchial ultrasound with transbronchial needle aspiration for restaging the mediastinum in lung cancer

Authors: Herth FJ et al.
URL: http://jco.ascopubs.org/cgi/content/full/26/20/3346

Comment: One hundred and twenty-four consecutive patients with tissue-proven stage IIIA-N2 disease, who were treated with induction chemotherapy, and who had undergone mediastinal restaging by endobronchial ultrasound-guided, transbronchial needle aspiration (EBUS-TBNA), were reviewed. All patients underwent thoracotomy with attempted curative resection and lymph node dissection regardless of the EBUS-TBNA findings. Overall sensitivity, specificity, positive predictive value, negative predictive value, and diagnostic accuracy of EBUS-TBNA for mediastinal restaging after induction chemotherapy were 76%, 100%, 100%, 20%, and 77%, respectively. EBUS-TBNA is a sensitive, specific, accurate, and minimally invasive test for mediastinal restaging of patients with non-small cell lung cancer. However, because of the low negative predictive value, tumour-negative findings should be confirmed by surgical staging before thoracotomy.

Combined endoesophageal-endobronchial ultrasound-guided, fine-needle aspiration of mediastinal lymph nodes through a single bronchoscope in 150 patients with suspected lung cancer

Authors: Herth FJ et al.
URL: http://chestjournal.chestpubs.org/content/early/2010/02/11/chest.09-2149.long

Comment: Endobronchial ultrasound-guided, transbronchial needle aspiration (EBUS-TBNA) samples paratracheal, subcarinal and hilar lymph nodes. Oesophageal, ultrasound-guided fine-needle aspiration (EUS-FNA) samples mediastinal lymph nodes located adjacent to the oesophagus. To date, two different endoscopes have been required. Consecutive patients with a diagnosis of suspected non-small cell lung cancer (NSCLC) underwent endoscopic staging by EBUS-TBNA and EUS-FNA using a single linear ultrasound bronchoscope. Surgical confirmation and clinical follow-up was used as the reference standard. A total of 619 nodes were endoscopically biopsied in 139 patients; 229 by EUS-FNA and 390 by EBUS-TBNA. The sensitivity of EUS-FNA was 89%, whereas that of EBUS-TBNA was 92%, with a sensitivity of 96% for the combined approach. EBUS-EUS-TBNA can be performed concurrently by one operator using a dedicated linear EBUS bronchoscope. The two procedures are complementary and provide better diagnostic accuracy when used in combination.
Airway stents

Authors: Lee P et al.
URL: http://www.chestmed.theclinics.com/article/PIIS0272523109000793/fulltext

Comment: Stents are used for palliation of symptoms of central airway obstruction caused by malignant or benign conditions. Stents may be applied for maintaining airway patency after dilatation of post-inflammatory and infectious strictures, for airway dehiscence after lung transplantation, and for the management of tracheobronchomalacia. Fistulas between the trachea or bronchi and the oesophagus and dehiscence of pneumonectomy stumps can be protected with covered stents. The choice of stent depends on careful selection of patients, characteristics of the airway stenosis, the physician’s expertise, and availability of equipment. Placement of tube stents requires rigid bronchoscopy and dilatation of strictures beforehand, whereas metal stents can be applied using a flexible bronchoscope. The advantages and disadvantages of commonly used airway stents are discussed.

Effectiveness and safety of bronchial thermoplasty in the treatment of severe asthma: a multicenter, randomized, double-blind, sham-controlled clinical trial

Authors: Castro M et al.
URL: http://ajrccm.atsjournals.org/cgi/content/full/181/2/116

Comment: This study evaluated the effectiveness and safety of bronchial thermoplasty (BT) versus a sham procedure, in subjects with severe asthma, who remained symptomatic despite treatment with high-dose inhaled corticosteroids and long-acting beta(2)-agonists. Two hundred and eighty-eight adults (intention-to-treat) were randomized to BT or sham control groups and underwent three bronchoscopy procedures. The primary outcome was the difference in Asthma Quality of Life Questionnaire (AQLQ) scores from baseline to the average at 6, 9, and 12 months (integrated AQLQ score). Adverse events and healthcare usage were evaluated to assess safety. Improvement from baseline in the integrated AQLQ score was superior in the BT group compared with the sham group. In the post-treatment period (6-52 weeks after BT), the BT group experienced fewer severe exacerbations, emergency department visits, and days missed from work/school compared with the sham group. BT improved asthma-specific quality of life with a reduction in severe exacerbations and healthcare use in subjects with severe asthma.

Interventional bronchoscopy from bench to bedside: new techniques for central and peripheral airway obstruction

Authors: Murgu SD, Colt HG
URL: http://www.chestmed.theclinics.com/article/PIIS0272523109001002/fulltext

Comment: This article discusses how basic scientific concepts, based on a greater understanding of airway physiology, support the development and dissemination of multi-dimensional classification systems for tracheal stenosis and expiratory central airway collapse, as well as innovative interventional bronchoscopic procedures for patients with asthma and chronic obstructive pulmonary disease.
Management of complications from diagnostic and interventional bronchoscopy

Authors: Lee P et al.
URL: http://www3.interscience.wiley.com/cgi-bin/fulltext/122585091/HTMLSTART

Comment: The new millennium ushered in advances in technologies and refinements to established techniques that facilitate the early detection of cancer, precise targeting of pulmonary nodules and infiltrates, and near-complete staging of the mediastinum, with combined endoscopic modalities and more effective palliation of inoperable tumours. In this article, we provide a concise overview of diagnostic and therapeutic bronchoscopic modalities, and discuss the associated complications and strategies for their management.

Advances in thoracoscopy: 100 years since Jacobaeus

Authors: Lee P et al.
Reference: Respiration 2010; 79: 177-86.
URL: http://content.karger.com/produktedb/produkte.asp?typ=fulltext&file=000268617

Comment: Thoracoscopy provides the physician with a window into the pleural space, and enables the biopsy of the parietal pleura under direct visual guidance, as well as chest tube placement and pleurodesis for recurrent pleural effusions or pneumothoraces in selected patients. In this review, we discuss the advances that have been achieved in thoracoscopy since its inception more than a century ago.

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