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386. The different ways to establish a diagnosis: needle and forcep

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Does pseudo-ROSE enhance the diagnostic utility for conventional TBNA?

Andrew Medford, Anilkumar Pillai. North Bristol Lung Centre, Southmead Hospital, Bristol, United Kingdom

Background: Conventional transbronchial needle aspiration (TBNA) is a useful mediastinal diagnostic and staging technique. It is more accessible and cheaper than endobronchial ultrasound. Some centres use ROSE (rapid on-site evaluation for cytology with a cytopathologist) to improve results but limited by cost and resources. There are less published studies on pseudo-ROSE (a cytotechnician assesses sample adequacy alone).

Hypothesis: Pseudo-ROSE improves diagnostic utility of TBNA.

Methods: 22 consecutive patients underwent pseudo-ROSE-TBNA for investigation of suspected lung cancer (with N2 or N3 disease on CT) in a UK teaching hospital by previously described methods. Diagnostic utility to detect mediastinal metastases was calculated via contingency table analysis (GraphPad Prism 5).

Results: Pseudo-ROSE-TBNA resulted in 13 true positive cases (59% of cohort) of malignancy (5 small cell, 8 non-small cell) with 7 true negative cases and 2 presumed false negative cases (10mm nodes in stations 10R and 3 on CT but not confirmed). 87% sensitivity, (compared to 78% in a UK non-ROSE study). 78% negative predictive value, 68% cancer prevalence and 91% accuracy. Pseudo-ROSE-TBNA detected granulomatous disease due to sarcoidosis in 3 of the 7 true negative cases.

Conclusion: Pseudo-ROSE improves the diagnostic utility of conventional TBNA for lymph node metastases in high prevalence cohorts with malignancy. In the absence of endobronchial ultrasound or conventional ROSE, pseudo-ROSE should be used as an effective and inexpensive adjunct to conventional TBNA.

References:

- Medford AR et al. A prospective study of conventional transbronchial needle aspiration: performance and cost utility. *Respiration* 2010;79(6):482-9.

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Transbronchial node aspiration for intrathoracic lymphadenopathy

HamidReza Jabbardarjani¹, Arda Kiani², Mehdi Bakhtiar¹, Negar Sheikhi³.

¹Tracheal Disease Research Center, NRITLD, Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Islamic Republic of Iran; ²Chronic Respiratory Diseases Research Center, NRITLD, Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Islamic Republic of Iran; ³Tobacco Prevention and Control Research Center, NRITLD, Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Islamic Republic of Iran

Background and objectives: Lymph node evaluation has been important for many years both regarding diagnosis and staging. This study was aimed at evaluating the diagnostic yield of transbronchial needle aspiration biopsy (TBNA) in patients with intrathoracic lymphadenopathy.

Methods: Our understudy population included all patients suffering from undiagnosed intrathoracic lymphadenopathies (LAP) with no accompanying pulmonary lesions on chest CT scan who had referred to bronchoscopy unit of Masih Daneshvari Hospital. After determining the anatomic location of LAP, patients underwent fiberoptic bronchoscopy (FOB) and TBNA using 19-gauge eXcelon aspiration needle. Four samples were taken from each patient from the same LAP location.

Results: In this study 39 patients were evaluated. The most common anatomic location of LAP was the paratracheal area seen in 14 patients (45.2%), next was subcarinal area and also hilar area with 12 cases (38.7%) for each of them. Five patients (15.6%) had LAP in other anatomical locations. Evaluation of the aspirates

obtained by TBNA showed that the sample was adequate and diagnostic in 21 patients (55.26%), adequate but non-diagnostic in 9 patients (23.68%) and inadequate in 8 cases (21.06%). Definite diagnosis was made in 22 patients among which the most common diagnosis was atypical and malignant lesions in 11 cases (50%) followed by sarcoidosis in 8 (36.36%), tuberculosis (TB) in 2 (9.09%) and other diagnoses in 1 (4.55%) case.

Conclusion: Based on our study results, TBNA was diagnostic in more than half the cases. Various studies have reported a wide range of results in this respect but all of them including ours emphasize on the acceptable diagnostic yield of this technique.

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Minimally invasive diagnostic techniques for mediastinal lesions

Rossen Petkov¹, Yordanka Yamakova², Emilia Petkova³, Danail Petrov¹, Georgi Yankov¹. ¹Thoracic Surgery Department, University Hospital of Pulmonary Diseases, Sofia, Bulgaria; ²Clinic of Anesthesia and Intensive Care, University Hospital of Pulmonary Diseases, Sofia, Bulgaria; ³Endocrinology Clinic, USBAL of Endocrinology, Sofia, Bulgaria

Aim: The aim of the study is to evaluate the diagnostic value and the complication rate of various minimally invasive diagnostic techniques by patients with mediastinal lesions (ML).

Materials and methods: In a prospective study (from 2001 to 2009) we observed 421 patients (pts) (227 males and 194 females, age -x = 45.7 ± 16.7 yrs.) with ML (-x = 56 mm ± SD 20mm). By 275 pts US guided true-cut needle biopsy (US-TCNB) were performed. By 18 pts we did CT guided TCNB. VATS (n=124), mediastinoscopy (n=18), anterior mediastinotomy (n=16) and thoracotomy (n=29) were performed by 187 pts: 17 pts with uninformative TCNB results (14 US-TCNB and 3 CT-TCNB), 37 with benign lesions proved by TCNB and 133 pts with ML inaccessible for image guided TCNB.

Results: US-TCNB gave an adequate material to the morphological diagnosis in 261 (94.9%) of patients with ML, sensitivity (Se) 96% and NPV 80%. The complication rate was 0.8%. CT-TCNB yielded positive diagnosis in 88.9% of cases, Se 88% and NPV 33%. The complications rate was 22%. VATS gave a morphological diagnosis in 121 pts (97.6%), Se 97% and NPV 84%. The complication rate of VATS was 9.7%. The accuracy of the mediastinoscopy was 87.5%, Se 86% and NPV 50%. The accuracy of the anterior mediastinotomy was 88.9%, Se 87.5% and NPV 50%. The complication rate of these procedures was 5%.

Conclusion: US - TCNB appears to be effective and a safe method in patients with US accessible ML. According to our results US- or CT- guided TCNB should be the first step in tissue diagnosis of mediastinal masses. Mediastinal lesions that are inaccessible by these methods can be diagnosed by mediastinoscopy, anterior mediastinotomy and VATS.

P3593

Interobserver analysis of assumed optimal positions for transbronchial needle aspiration

Kjetil Roth¹, Tomas Eagan², Jon Hardie². ¹Department of Internal Medicine, Helse Møre og Romsdal, Ålesund Hospital, Ålesund, Norway; ²Department of Thoracic Medicine, Haukeland University Hospital, Bergen, Norway

Background: Various guidelines have described the optimal positions for transbronchial sampling from lymph node stations. The variability in expert opinion for these positions is unknown.

Objective: To describe the interobserver variability in the assumed optimal position for transbronchial needle aspiration (TBNA) from lymph node station 4, 7, 10 and 11.

Methods: Four physicians with large experience in TBNA were shown six bronchoscopy pictures and asked to describe the optimal positions for TBNA. The physicians marked an area for the assumed best position for different lymph node stations. A mean diameter was calculated for each area. The mean diameter represented the intraobserver spread for each expert in the lymph node station. The distance to an average X and Y-coordinate defined the interobserver variation.

Results: The mean diameter that represented the average spread was 1.14 cm (95% confidence interval: 0.91-1.38 cm). Lymph node station 11L had an average intraobserver diameter below the 95% confidence interval. The average intraobserver diameter in lymph node station 4R and 10L were above the 95% confidence interval.

The median interobserver distance was 0.64 cm (interquartiles range 0.17-1.04 cm). Lymph node station 7L had a mean interobserver distance smaller than the 25% quartile, lymph node station 10R and 10L had an interobserver distance larger than the 75% quartile.

Conclusions: The intraobserver spread was large in station 4R and 10L, the interobserver variation was large in 10R and 10L compared to the other lymph node stations that were examined.

P3594**The diagnostic yield and safety of fine needle aspiration of intrathoracic hydatid cysts: A three year retrospective study**

Obianuju B. Ozoh^{1,2}, Coenraad F.N. Koegelenberg¹, Raquel Brauns¹, Elvis M. Irusen¹, Florian von Groote-Bidlingmaier¹, Colleen A. Wright³, Mercia Louw³, Pawel T. Schubert³, Chris T. Bolliger¹. ¹Medicine, University of Stellenbosch, Cape Town, South Africa; ²Medicine, University of Lagos, Nigeria; ³Anatomical Pathology, University of Stellenbosch, Cape Town, South Africa

Background: Hydatid disease remains a clinically relevant entity in much of the developing world. A presumptive diagnosis may be confirmed by cytological analysis of liquid obtained by percutaneous aspiration of the cyst. There is, however, a paucity of data on the safety and diagnostic yield of this approach.

Objectives: To assess ultrasound (US)-assisted transthoracic fine needle aspiration (TTFNA) of suspected thoracic hydatid cysts with regards to safety and diagnostic yield.

Methods: We retrospectively included 11 cases (35.8±9.1 years, 7 females) who underwent US-assisted TTFNA over a three-year period and who were eventually confirmed to have histological proof (surgical resection) of hydatid cyst. Complications were reviewed, and the diagnostic yield of US-assisted TTFNA was compared with serology (using histology as the gold standard).

Results: Cytology was diagnostic in 5/11 of cases (45.5%), compared to serology that was diagnostic in 6/8 cases (75%, $p = 0.352$). Cytology was diagnostic in one case with negative serology. A serious complication (empyema) was observed in one case.

Conclusions: US-assisted FNA of thoracic hydatid cysts has a modest diagnostic yield. US-assisted FNA should be reserved for cases with indistinct imaging and/or a negative serology, given the risk of complications.

P3595**EBUS-TBNA for diagnosis of granulomatous mediastinal lymphadenopathy**

Su Ying Low, Mariko S.Y. Koh, Thun-How Ong, Ghee-Chee Phua, Devanand Anantham. *Department of Respiratory and Critical Care Medicine, Singapore General Hospital, Singapore, Singapore*

Methods: Retrospective review of all patients who underwent EBUS-TBNA for suspected granulomatous mediastinal lymphadenopathy at Singapore General Hospital between 2008 and 2011.

Results: Over 3 years 33/371(9%) patients underwent EBUS-TBNA for suspected granulomatous mediastinal lymphadenopathy – 18 for tuberculous(TB) and non-tuberculous mycobacterial(NTM) lymphadenitis, 15 for sarcoidosis. Mean age 47±18 years, 54.5% male. Total of 49 lymph node stations were sampled, with station 7 the most frequent (43%). Median size of lymph node was 17mm(8-30), median number of passes per lymph node 2(1-5), and core biopsy obtained in 45(92%). Median follow-up was 9months(0.5-26).

13/18 patients had TB/NTM and EBUS-TBNA was diagnostic in 9. EBUS-TBNA cultures were positive in 6(67%), 1 showed acid-fast bacilli but cultures were negative, 2 had necrotizing granulomatous inflammation from biopsies and sputum cultures grew TB. Of the 4 false negatives, mediastinoscopy in 1 patient found NTM, 1 patient's bronchial washings grew TB, and 2 patients responded to TB treatment.

14/15 patients had sarcoidosis and EBUS-TBNA was diagnostic in 9 with non-caseating granulomatous inflammation on histology. Of the 5 false negatives, 1 patient had a transbronchial lung biopsy consistent with sarcoidosis, the other 4 were diagnosed based on clinical history, response to treatment and follow-up. Sensitivities of EBUS-TBNA for TB/NTM, sarcoidosis and overall granulomatous mediastinal lymphadenopathy were 69%, 64%, 64%, NPV were 56%, 17%, 33%, and accuracies were 78%, 67%, 70% respectively.

Conclusion: EBUS-TBNA can be useful in the diagnosis of suspected granulomatous mediastinal lymphadenopathy with a sensitivity and accuracy of >60%.

P3596**EBUS-TBNA in a tertiary care center: Real life experience and quality assessment**

Philippe Nguyen, Michel Gagnon, Thomas Vandemoortele. *Department of Pulmonology, Centre Hospitalier de l'Université de Montréal, Montreal, QC, Canada*

Introduction: Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) has become the standard minimally invasive modality for sampling mediastinal lymph nodes. In this study, we evaluate our performance with the technique and propose a methodology that can be used in other center.

Method: We included all EBUS-TBNA procedures performed in 2011 in our service. We proceeded to a thorough analysis of each case from a pragmatic perspective to evaluate the regional node sampling yield and our ability to conclude the investigation by achieving diagnosis and staging, avoiding unnecessary surgery and allowing direction for management.

Results: EBUS-TBNA was performed in 53 consecutive patients. The indication was suspicion of malignant disease in 46 patients (87%) and benign in 7 patients (13%). In total, 117 nodes were sampled. The overall sensitivity ranged from 76 to 91% and the negative predictive value ranged from 78 to 92%. The median size of nodes was 15 mm. If malignant cells were discovered, histological precision was obtained in 68%. EBUS-TBNA was clinically sufficient in 43 of the 53

patients (diagnostic yield = 81%) and prevented 18 out of 27 patients (67%) from undergoing surgery. No major complications were reported.

Conclusion: The attained sensitivity and negative predictive value are similar to what has been published. Thorough analysis of patient cases is key in improving performance with this technique, and we encourage all centers to analyze their practice periodically in order to maintain quality standards. Finally, in our establishment, EBUS-TBNA offers clinicians an additional step to simplify healthcare and probably reduce the economic burden of such investigations.

P3597**Transesophageal ultrasound-guided fine needle aspiration (EUS-guided FNA) as first diagnostic step of intrapulmonary lesions**

Micaela Romagnoli¹, Lucia Crociani¹, Carlo Gurioli¹, Gian Luca Casoni¹, Alessandra Dubini², Sara Tomassetti¹, Christian Gurioli¹, Claudia Ravaglia¹, Venerino Poletti¹. ¹Thoracic Diseases, Pulmonology Unit, Forlì, Italy; ²Pathology, Pathology, Forlì, Italy

Background: Bronchoscopy fails to establish a diagnosis in up to 30% of patients with centrally located lung cancer. EUS-guided FNA has been used for the diagnosis of suspected lung cancer near or adjacent to the esophagus in patients who had undergone a non-diagnostic bronchoscopy.

Aim: To prospectively assess the feasibility and yield of EUS-FNA as first diagnostic step in the diagnosis of intrapulmonary tumours located near or adjacent to the esophagus.

Study design: Patients with a CT-scan of the chest revealing an intrapulmonary tumour located near or adjacent to the esophagus were enrolled. They underwent EUS-FNA (Olympus, GF UCT 160) under deep sedation.

Results: Fourteen patients were included, and EUS-FNA diagnosed lung cancer in all cases (12 NSCLC, 2 SCLC) (yield=100%). No complications occurred. The subtyping of (NSCLC) was allowed by cytological specimens in 9 cases (65%), by cell blocks in 3 cases (21%), whereas NSCLC could not be subtyped in 2 cases (14%).

Conclusions: EUS-guided FNA might represent the first diagnostic step in patients with intrapulmonary tumours located near or adjacent to the esophagus.

P3598**Virtual bronchoscopic navigation combined with endobronchial ultrasound for diagnosing small peripheral pulmonary lesions**

Masafumi Misawa, Haruki Kobayashi, Kei Nakashima, Nobuhiro Asai, Naoko Katsurada, Hideki Makino, Norihiro Kaneko, Masahiro Aoshima. *Pulmonary Department, Kameda Medical Center, Kamogawa-city, Japan*

Background: Flexible fiberoptic bronchoscope may be a valuable procedure to evaluate pulmonary nodules. However, a diagnostic yield has been reported as low as 34% for peripheral lesions less than 2 cm in size.

Objectives: This case series study evaluated the value of the virtual bronchoscopic navigation (VBN) combined with endobronchial ultrasound (EBUS) for diagnosing peripheral pulmonary lesions.

Methods: Enrolled subjects were patients with pulmonary lesions which were deemed too small and peripheral for a conventional bronchoscopic sampling, who were referred to Kameda Medical Center for diagnostic bronchoscopy between September 2010 and February 2012. VBN was utilized to produce a pathway into the target lesion. Once the fiberoptic bronchoscope was advanced as far as possible in this pathway, a guide sheath with EBUS probe was then advanced to the target lesion under fluoroscopy guidance. After visualization of the lesion by EBUS, the probe was removed leaving the guide sheath in place. Samplings were then performed through the guide sheath under fluoroscopic guidance.

Results: Study subjects included 58 patients with 62 lesions, mean age 68 years. The mean lesion size was 20 mm in diameter. Bronchi seen on VB image were highly consistent with the actual structure. The sensitivity for diagnosing malignancy was 43% and negative predictive value was 61%. Overall accuracy for diagnosis of all lesions was 69%.

Conclusion: VBN combined with EBUS is useful method for collecting samples from small peripheral pulmonary lesions and may help increase the diagnostic yield of transbronchial samplings in diagnosing small peripheral pulmonary lesions.

P3599**Efficacy of transbronchial biopsies in diagnostics of smear-negative pulmonary TB**

Ilya Sivokozov, Olga Lovacheva. *Endoscopy, CTRI RAMS, Moscow, Russian Federation*

Background: Around half of all cases of tuberculosis are smear-negative. In order to achieve the final diagnosis and to find a susceptibility profile of mycobacteria, bronchoscopy is used.

Aim: To investigate the effectiveness of bronchoscopy in the diagnosis of smear-negative TB.

Materials and methods: We analyzed 99 cases of smear-negative, therapy-naive patients with pulmonary TB without cavity according to chest CT. All of them undergo a bronchoscopy with bronchial swabs with/without brush-biopsy of targeted bronchus. We analyzed further dataset: results of cytological examination of brush-biopsy (acid-fast bacilli detection, components of specific granuloma,

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caseous necrosis) and results for all available material of luminescent microscopy, PCR, BACTEC MGIT 960, and classical Lowenstein-Jensen (LY) culture.

Results: Brush-biopsy was performed in 81/99 pts (81.2%), cytology revealed acid-fast bacilli in 14/81 (17.3%), specific granuloma components were found in 12/81 (14.8%), caseous necrosis was found in 15/81 (18.5%). In summary, combining all three components, cytology revealed TB signs in 21/81 (25.9%) with brush. Luminescent microscopy of all biopsy types was positive in 6/81 (9.9%). PCR testing was positive in 60/99 pts (60.6%), whereas microbiology was less effective - 15/99 (15.2%) for LY culture, and 42/99 (42.4%) for BACTEC. In summary, PCR and culture methods were strong enough to detect as much as 68/99 (68.7%) of all smear-negative TB-cases. Combining the cytology, genetics and culture data, 71/99 (71.8%) of cases were detected.

Conclusion: Bronchoscopy with brush-biopsy with or without swabs is effective method of diagnostics for patients with smear-negative pulmonary TB.

P3600

Intratumoral injection of tranexamic acid for control of biopsy-induced bleeding: Two years' experience of a new bronchoscopic technique

Adil Zamani, Pulmonary Medicine, Meram Medical Faculty, Konya University, Konya, Turkey

Background: Significant bleeding may occur following forceps biopsy or brushing of necrotic or hypervascular tumors in the airways. In some cases, such methods as endobronchial instillation of iced saline lavage and epinephrine may fail to control the bleeding.

Objectives: To describe and assess the efficacy of a new bronchoscopic technique using intratumoral injection of tranexamic acid (IIT) for control bleeding during biopsy procedure.

Method: IIT was performed in those patients who had endoscopically visible tumoral lesions with continued active bleeding following the first attempt of bronchoscopic sampling (forceps biopsy or endobronchial needle aspiration). Tranexamic acid (TEA) in dose of 250-500 mg was injected through a 22-gauge Wang cytology needle (MW-122) into the lesion. After 2-3 minutes of waiting, multiple forceps biopsy specimens were obtained from the lesion.

Results: Between Oct 2009 and Jan 2012, 14 male patients (mean age, 61 yrs; range, 41-80 yrs) underwent bronchoscopic IIT. Two patients with drug-eluting stents were on continuous dual antiplatelet therapy (aspirin plus clopidogrel). Multiple (3 to 10; mean, 5.7) and deep biopsy specimens were obtained from the lesions without producing active bleeding. The following histopathologic diagnoses were made: squamous cell carcinoma (n=9), non-small cell lung cancer (n=3), and small cell carcinoma (n=2). There were no side effects observed with TEA.

Conclusion: Bronchoscopic IIT is a useful and safe technique for controlling significant bleeding due to forceps biopsy procedure, and might be suggested as a prebiopsy injection for endobronchial necrotic or hypervascular tumors.

P3601

Comparison of conventional forceps biopsy and cryobiopsy in endobronchial lesions

HamidReza Jabbaridariani¹, Ramin Sami¹, Arda Kiani², Mohammadreza Masjedi³, ¹Tracheal Disease Research Center, NRITLD, Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Islamic Republic of Iran; ²Chronic Respiratory Diseases Research Center, NRITLD, Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Islamic Republic of Iran; ³Clinical Tuberculosis and Epidemiology Research Center, NRITLD, Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Islamic Republic of Iran

Background and objectives: Forceps biopsy has long been the standard method of extracting samples from endobronchial lesions, however diagnostic yield of the specimen obtained by this method (72%) is not very desirable due to small size and artifact. Therefore, in order to increase the diagnostic yield in endobronchial lesions as well as diminish the complications we evaluated a new technique called cryobiopsy (using flexible cryoprobes to obtain frozen samples).

Methods: All patients with endobronchial lesion except for vascular lesions referred to Intervention ward of Masih Daneshvari Hospital were included in this study. For each patient, 6 specimens were obtained by conventional forceps, and 2 were extracted through cryobiopsy, one of them 3 seconds after freezing (CB3), and the other one 5 seconds after freezing (CB5). Bleeding during the procedure, and diagnostic yield of the samples were evaluated closely.

Results: Of all 30 patients, diagnosis was achieved for 27 patients (90%). Diagnostic rate of forceps biopsies was 67%, while this rate was 80% and 78% for CB3 and CB5 respectively. Although there was no significant difference between these three rates, total diagnostic yield of both CB3 and CB5 together was significantly higher than conventional biopsy (P-value=0.016). Severe bleeding requiring APC to be controlled occurred in 2 cases during CB5, while no major hemorrhage happened during forceps biopsy.

Conclusion: According to our results, obtaining at least two samples from endobronchial lesions by cryobiopsy technique can lead to a higher rate of diagnosis compared with 6 samples by forceps biopsy. However, duration of freezing (3 or 5 seconds) does not have a significant impact on the quality of specimen.

P3602

Additional benefit of cryotechnique in transbronchial biopsies for histological diagnosis in interstitial lung disease (ILD)

Henrik Wurps¹, Sergej Griff², Wim Ammenwerth¹, Torsten Blum¹, Nicolas Schönfeld¹, Thomas Mairinger², Torsten T. Bauer¹, Wolfram Grüning³, ¹Klinik für Pneumologie, Lungenklinik Heckeshorn, HELIOS-Klinikum Emil v. Behring, Berlin, Germany; ²Institut für Pathologie, HELIOS-Klinikum Emil v. Behring, Berlin, Germany; ³Pneumologische Klinik, HELIOS Kliniken Schwerin, Mecklenburg-Vorpommern, Germany

Background: Due to the small specimen size of transbronchial forceps biopsy, the histological diagnosis of interstitial lung disease is often difficult. In comparison transbronchial cryobiopsies were shown to be bigger and to contain more often and larger amount of alveolar tissue.

Methods: Since 2009, all histological results of patients suspicious of ILD (clinical signs, pulmonary function, CT-scan-criteria) who underwent bronchoscopy with transbronchial forceps- and cryobiopsy were analysed concerning the impact of the additional use of cryotechnique.

Results: We evaluated data of 34 patients (age 60.0±13.2 years) who underwent forceps- and cryobiopsy. For 10 patients (29.4%) neither forceps- nor cryobiopsy assured a histological diagnosis. In 11 cases (32.4%) both methods ensured a diagnosis. In 12 cases (35.3%) a histological classification was found only in the cryobiopsy, in 1 case (2.9%) only in the forcepsbiopsy.

Conclusion: By additional use of the cryoprobe in transbronchial biopsy, in this prospective case series up to today we were able to increase the amount of ensured histological diagnoses in ILD from 12/34 = 35.3% without cryobiopsy to 23/34 = 67.6% with cryobiopsy. This shows the high potential of cryotechnique as a tool in transbronchial biopsy in the diagnostic of ILD.

P3603

In vivo probe-based confocal laser endomicroscopy in chronic diffuse parenchymal lung diseases

Mathieu Salaun^{1,2}, Stéphane Dominique¹, Francis Roussel³, Anne Genevois⁴, Vincent Jounieaux⁵, Gérard ZALCMAN⁶, Luc Thiberville^{1,2}, ¹Clinique Pneumologique, Rouen University Hospital, Rouen, France; ²Quant.I.F - LITIS EA 4108, Rouen University, Rouen, France; ³Department of Cytology & Pathology, Rouen University Hospital, Rouen, France; ⁴Department of Radiology, Rouen University Hospital, Rouen, France; ⁵Department of Pneumology, Amiens University Hospital, Amiens, France; ⁶Department of Pneumology, Caen University Hospital, Caen, France

Diagnosis of diffuse parenchymal lung diseases (DPLDs) is challenging and requires a multidisciplinary approach. Probe-based confocal laser endomicroscopy (pCLE) enables microimaging of the distal lung in vivo.

Objective: To describe pCLE features in DPLD patients.

Methods: pCLE was performed in 52 DPLD patients and 21 healthy volunteers (HV). Results were compared between HV and each of the pathologic groups, blindly to the diagnosis (Fisher's exact test and Bonferroni correction). The association between the pCLE and CTscan features was assessed using multivariate analysis.

Results: 9 of the 17 pCLE descriptors were significantly more frequent in DPLD patients than in HV (131 areas). pCLE differed in sarcoidosis (16 patients, 105 areas) by the presence of fluorescent bronchiolar cells, convoluted acinar elastic fibers, alveolar nodules; in idiopathic pulmonary fibrosis (n=8, 36 areas) by interalveolar septal fibers and a rigid acinar elastic network; hypersensitivity pneumonitis (n=6, 34 areas) by bronchiolar and alveolar cells; non-specific interstitial pneumonia (n=6, 38 areas) by fluorescent bronchiolar cells, septal fibers and a rigid network; asbestosis (n=10, 72 areas) by alveolar mouths <200 µm, axial fibers >20 µm, septal fibers, and a rigid and dense acinar elastic network; systemic sclerosis (n=6, 38 areas) by fluorescent alveolar cells, septal fibers and a rigid network. HRCIT honeycombing was associated to pCLE large alveolar mouths and a disorganized elastic network; both interlobular septa thickening and cysts were associated to the presence of septal fibers using pCLE.

Conclusion: pCLE could be added to the multidisciplinary discussion for the etiologic diagnosis of DPLD.

P3604

Retrospective study of transbronchial cryobiopsy (TCB) data in a case series of 20 patients with interstitial lung disease

Sebastian Böing, Lars Hagmeyer, Sven Stieglitz, Christina Priegnitz, Winfried Randerath, Institute for Pneumology, University Witten/Herdecke, Solingen, Germany

Introduction: So far surgical lung biopsies are the state-of-the-art technique to obtain histological data in patients with interstitial lung disease. We analyzed whether histological specimens obtained by TCB could contribute to establishing the definite diagnosis and whether the procedure is a safe one.

Methods: A series of 20 patients showing interstitial patterns in high-resolution computed tomography underwent the procedure of TCB. In all patients, 2-3 biopsies were sampled from different ipsilateral segments.

Results: In 16/20 (80%) cases the pathological findings correlated well with the suspected diagnosis according to clinical, serological, radiological and bronchoalveolar lavage fluid evaluation findings. In 4/20 (20%) patients the diagnosis

remained doubtful after TCB so that these patients were subsequently forwarded to video-assisted thoracoscopic biopsy. In 3/4 (75%) of these cases the surgical lung biopsy and the TCB specimen showed the same histological pattern, therefore leading to a definite diagnosis. Regarding the safety of the studied procedure: in 4/20 (20%) patients an iatrogenic pneumothorax occurred after TCB, endobronchial bleeding was severe in 1/20 (5%) cases and moderate in 11/20 (55%) cases. Bleeding in all patients could be stopped by endoluminal application of adrenaline.

Conclusions: TCB seems to be a suitable minimal-invasive tool in the diagnostic work-up of ILD-patients with a moderate periprocedural risk.

P3605

Diagnostic accuracy of transthoracic needle aspiration (TTNA) in the evaluation of pulmonary nodules

Carmen Manta¹, Massimiliano Sivori¹, Vanna Balestracci¹, Donatella Fini¹, Roberto Tomè¹, Ugo Giannoni², Ilan Rosemberg², Pier Aldo Canessa¹.

¹Pneumology, San Bartolomeo Hospital, Sarzana, La Spezia, Italy; ²Radiology, San Bartolomeo Hospital, Sarzana, La Spezia, Italy

Percutaneous transthoracic needle aspiration (TTNA) biopsy is a diagnostic procedure used in pulmonary nodules where bronchoscopy does not reach. The aim of this study is to assess the value of TTNA in our field where the exams are performed by pneumologists.

We assessed 108 consecutive patients who had a TTNA biopsy from January 2008 and December 2010 at our ward.

All patients had previously undergone to bronchoscopy with a negative diagnostic result but with a strong clinical suspicion for malignant injury.

During CT examination diameters of lesions were measured and the point of aspiration of cytological sample was pinpointed.

The point of aspiration was in periphery or in the middle of the lesion. Cytological examinations diagnosed 70 (64.8%) malignant cases.

Among 38 non malignant cytology, 29 patients were proved false negative cases. Sensitivity of TTNA was 71%, specificity 100%.

Sensitivity of TTNA of central samples was 76.32%, peripheral 69.81%.

We divided all patients into two groups: malignancy or benign nature of cytology. We processed a table with measures of diameters of nodules.

Measures of nodules

	Total	Positive cytology	Negative cytology
Mean (cm)	3.97	4.01	3.91
Standard deviation	1.97	1.87	2.16

64 (91%) malignant cases had a large diameter (>2cm), 6 (9%) had a small diameter (<2cm), 35 (92%) benign cases had a large diameter (>2cm), 3 (8%) cases had a small diameter (<2cm).

Complications were controlled: 21 (19.4%) pneumothorax, 14 (13%) alveolar hemorrhages, 4 (3.4%) alveolar hemorrhages and pneumothorax, 2 (1.9%) emphysema. TTNA is an accurate and safe procedure if it is performed by pneumologist. Diagnostic performance of TTNA is not influenced by diameter and location.

P3606

CT-guided biopsy of lung lesions: Experience of an oncology center in Brazil

Anna Morais^{1,2}, Maria Cecilia Maiorano^{1,2}, Juliana Puka^{1,2}, Caio Fernandes^{1,2}, Frederico Fernandes^{1,2}, Gustavo Prado^{1,2}, Teresa Takagaki^{1,2}. ¹Pulmonary Division, Heart Institute (Incor) - University of São Paulo Medical School, São Paulo, SP, Brazil; ²Pulmonary Division, São Paulo State Cancer Institute - University of São Paulo Medical School, São Paulo, SP, Brazil

Introduction: Computed tomography (CT) guided lung biopsy is widely accepted as an effective and safe diagnostic procedure for accessing thoracic lesions.

Aims: To present the experience of an oncology center in Brazil in the use of CT-guided lung biopsy and describe its effectiveness and complications.

Materials and methods: A retrospective analysis of medical records from outpatients attending routine consultations at Pulmonary Division of São Paulo State Cancer Institute (São Paulo, Brazil), who underwent transthoracic biopsy between December 2010 and November 2011 was conducted. Descriptive analysis of patients' characteristics, lesions' aspects, procedure techniques, diagnostic yield and complications was performed. Subgroup analysis was carried out to access differences between complicated and non-complicated procedures. Predictors of complications identified in univariate analysis were submitted to logistic regression to explore their significance as independent risk factors.

Results: 71 subjects were submitted to CT-guided lung biopsy. Results were diagnostic in 60 cases (84.5%). Lesions were malignant in 55 (91.6%) and benign in 4 cases. Overall complication rate was 22% and included 14 pneumothorax (19.7%) and 2 hemothorax (2.8%). Chest drainage was necessary in 4 cases (5.6%). A statistically significant correlation was found between lesion diameter and complication. Smaller lesions were associated with higher rates of complications (OR 9.82, for first quartile vs others).

Conclusions: CT-guided lung biopsy resulted in a high diagnostic yield with an acceptable rate of non-severe complications, being pneumothorax the most frequent. Small lesions were more prone to complicate.

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Diagnostic approach of lung malignancies through CT-guided percutaneous needle cytology and biopsy

Carla Ribeiro¹, Ines Ladeira¹, Ana Oliveira¹, Manuela Vanzeller¹, Tiago Pereira², Barbara Parente¹. ¹Pulmonology Department, Centro Hospitalar de Vila Nova de Gaia, Vila Nova de Gaia, Portugal; ²Radiology Department, Centro Hospitalar de Vila Nova de Gaia, Vila Nova de Gaia, Portugal

Background: The use of CT-guided percutaneous needle procedures is well established in the diagnostic approach of suspected lung malignancy.

Aim: To evaluate the efficacy and the complication rate of these procedures.

Methods: A retrospective study of patients submitted to transthoracic needle cytology/core biopsy for suspected lung malignancy in a 2 year period.

Results: We assessed 129 episodes concerning 117 patients (213 punctures), 76% male, mean age 65.4 years.

Most common localizations were RUL 35,7% and RLL 22,5%. 55% had other lesions.

Citology was performed in all patients; core needle biopsy was needed in 23,3%. 107 patients have a definite diagnosis (malignancy in 83,2%) of which 63,6% were done as an extemporaneous exam. The most frequent diagnosis was lung adenocarcinoma (36,4%) and NSCLC (12,1%).

We assessed 15 episodes of pneumothorax (7% of punctures), 3 needing aspiration and 1 tube drainage, 5 small hemorrhagic episodes and 1 hemoptysis. The distance to the chest wall significantly affected the presence of pneumothorax (3,8 vs 17,6mm; p<0,01).

Nodules that were diagnosed as cancer were statistically bigger than non malignant lesions (51,7 vs 33,8 mm) (p=0,01). Bigger nodules had a higher need of core needle biopsy in order to obtain a diagnosis (p=0,01).

The presence of cavitation or ground glass opacification did not interfere with diagnostic accuracy.

Conclusions: CT-guided percutaneous lung punctures are important tools in the diagnostic approach of lung malignancies with a low rate of complications. The possibility of having a pathologist to provide an extemporaneous exam speeds the diagnosis and reduces the need for further invasive diagnosis and iatrogenic damage.

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Role of bronchial artery embolisation in chronic recurrent haemoptysis

Debajyoti Bhattacharyya¹, Kamal Pathak², M.S. Barthwal¹, CDS Katoch¹.

¹Respiratory Medicine, Military Hospital (Cardio Thoracic Centre), Pune, Maharashtra, India; ²Radiology, Military Hospital (Cardio Thoracic Centre), Pune, Maharashtra, India

Introduction: Bronchial artery embolisation (BAE) involves selective bronchial artery angiography, followed by embolisation of identified abnormal vessels. It is useful in massive haemoptysis. But there are only a few literatures on its use in chronic recurrent haemoptysis.

Aims and objectives: To assess the efficacy and safety of BAE in the management of chronic recurrent haemoptysis.

Methods: This is a retrospective study of all patients with chronic recurrent haemoptysis who underwent BAE between January 2007 and January 2012 in a tertiary care hospital. The decision to offer BAE and its timing was jointly made after assessment by respiratory physician and interventional radiologist.

Results: 63 patients, (39 males and 24 females), underwent BAE for chronic recurrent haemoptysis during the period of study. Mean age of patients was 32.5 years (range: 18-81 years). Maximum number of patients recruited in this study had active pulmonary tuberculosis (29 cases – 46.0%). Amongst them, five patients had MDR, and one case had XDR-TB. 18 (28.5%) patients had bronchiectasis. Malignancy was the cause of haemoptysis in 7 (11.1%) cases. Mycetoma was present in 5 (7.9%) cases. One patient (1.5%) had lung abscess. BAE was successful in 58 (92.1%) cases. Bleeding stopped in 3 more patients following repeat procedure within a period of 48 hours. There was no major complication. Three patients had a short period of self limiting febrile illness. Three other patients developed local haematoma which improved following compression of the local part.

Conclusions: BAE is an effective means of controlling chronic recurrent haemoptysis. It is also a safe procedure.

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Bronchial artery embolization in the management of hemoptysis:

A multicenter study in 218 cases

Maria Dimadi¹, Katerina Dimakou², Sofia Tassi¹, Maria Salomidou¹, Melita Nikolopoulou¹, Demosthenis Antoniou¹, Andreas Anastasopoulos¹, Ilias Iglesias³, Maria Pomoni³, Katerina Malagari³. ¹1st Pulmonary Department, "Sotiria" Athens Chest Hospital, Athens, Greece; ²6th Pulmonary Department, "Sotiria" Athens Chest Hospital, Athens, Greece; ³Radiology, University of Athens, Greece

Aim: To evaluate the short and long term results in control of massive and chronic recurrent hemoptysis in 218 patients with special microspheres (embospheres).

Material and methods: Fifty six patients with massive and 162 with chronic recurrent hemoptysis were included. Microcatheters were used to achieve distal embolization with precisely calibrated microspheres of hydrogel core and polyzene

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coverl, sized 300-400 μ m or above 500 μ m if antegrated shunting were seen. The mechanical properties of these spheric particles prevent aggregation and clogging allowing more distal embolization and accurate choice of the diameters of vessels to be occluded.

RESULTS: The most common cause of hemoptysis was bronchiectasis in 126 (58%) of patients, of whom 27 (12,4%) had cystic fibrosis, followed by lung cancer in 27 (12,4%), tuberculous cavities in 14 (6,4%), mycetomas in 8 (3,6%), fibrothorax in 6 (2,8%), bullectomy adhesion in 5 (2,3%), Takayasu arteritis in 1 (0,5%), arteriovenous malformation in 1 (0,5%) and cryptogenic in 19 (8,7%) cases. Non bronchial collaterals were embolized in 36 (16,6%). Successful control of the hemoptysis was seen in 89% after the 1st session and in 94% after the 2d. Mean follow up period was 3.7 years. In cystic fibrosis bronchiectasis the overall recurrence was 36%, with a mean time to reccure 26.2 months, whereas without cystic fibrosis recurrence was 11%, in a mean time of 3.3 years. Major hemoptysis free rates were 92.2%, 83% and 69.6% at 1, 3 and 5 years respectively. Fever was seen in 3.6% and transient chest pain in 12.4% of cases.

Conclusion: The management of massive and chronic recurrent hemoptysis is safe and successful using precisely calibrated embospheres.