

Minimally Invasive Surgical Strategies in the first Brazilian Lung Cancer Screening Trial (BRELT1)

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BACKGROUND: Lung cancer (LC) is the leading cause of cancer death worldwide and the second most common in Brazil. Prevention with smoking cessation and early detection with low-dose chest tomography (LDCT) are effective in reducing mortality. However, the large amount of indeterminate nodules found on LDCT raises questions about costs and safety in a possible excessive invasive investigation of the findings. BRELT 1 is the first study on LDCT screening in Latin America, sponsored by a limited federal grant (PROADI-SUS). We detail the indications, techniques and results of biopsies performed in BRELT 1; with emphasis on cases diagnosed with LC. **METHODS:** The study was approved by the Institutional Review Board, and all participants signed an informed consent. Inclusion criteria were asymptomatic current or former smokers (<15 years), with at least 30 pack years of smoking history and age of 55 years old or older. All patients underwent LDCT. In this analysis of the baseline data from the BRELT1, we assessed consecutive patients undergoing biopsies following multidisciplinary analysis of the LDCT findings. The protocol was based on the National Comprehensive Cancer Network (NCCN), Fleischner Society and National Lung Screening Trial (NLST) criteria. A 4mm nodule size was the cut-off to consider a LDCT as “positive”. Biopsy techniques were defined according to the location of the lesion, considering the less aggressive approach. **RESULTS:** From January 2013 to July 2014 790 subjects were enrolled. Positive LDCT were reported in 312 (39.4%) subjects, with a total of 552 nodules >4mm. Restricted criteria for biopsy indicated 37 procedures in 26 participants (8% of positive studies); serial LDCT was indicated on the remaining subjects. The approaches were 15 transthoracic biopsies, seven bronchoscopies, two endobronchial ultrasounds (EBUS) and 13 surgeries. In 15 cases, benign lesions were diagnosed. Non-small cell lung cancer was diagnosed in 11 patients (prevalence of 1.3%). In 9 cases (stages IA/IB), treatment was by resection only. In one case neoadjuvant chemotherapy was used (stage IIIA). In other subject advanced disease was diagnosed (stage IV). From the 13 surgeries performed in this study, 9 were video-assisted (VATS) lobectomies, two VATS segmentectomies and one bi-lobectomy by thoracotomy. One robotic VATS was performed for removal of posterior mediastinal lesion. Mean length of stay (LOS) in the ICU was 30 hours. Chest tube drainage was kept for 3.5 days, resulting in a mean hospital LOS of 4 days (range 2-7 days). As complications one case of subcutaneous emphysema and one case of intense pain was observed. There is no mortality. **Conclusion:** LDCT screening is feasible and safe in Brazil applying the current international criteria. Multidisciplinary approach with minimally invasive strategies was the key to minimize morbidity in such population.