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| **Ultrathin bronchoscopy for peripheral pulmonary lesions (PPLs); pilot randomised trial of transbronchial needle aspiration before or after conventional biopsy/brushing.** |
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| **Introduction/Aim:** Current management of lung nodules is not optimal due to challenges with biopsy. They are often small, deep and found in people often at risk of complications from biopsy. Successful diagnostic biopsy at a small size allows definitive management, including cure of early-stage lung cancers leading to better health outcomes. We describe the pilot study sequencing trial of next- generation ultrathin bronchoscopy with flexible needle aspiration compared to usual care. **Methods:** Single centre prospective pilot study investigating the utility of radial probe endobronchial ultrasound (rEBUS) via ultrathin bronchoscopy (UTB) with biopsy including PeriView flex needle in patients referred for the sampling of PPLs (ANZCTR ACTRN12619000703101, HREC/2019/QPCH/48247). Sampling order was randomised to peripheral transbronchial needle aspiration (pTBNA) (Olympus Periview FLEX) sampling either before or after transbronchial forceps biopsy and brush sampling, followed by a targeted lavage as the final intervention. Use of rapid on site cytology (ROSE) was optional. Diagnostic yield from cytology or histopathology, clinical outcomes after a minimum of 12 months follow-up and complication rates were recorded. **Results:** 101 sampled PPLs were included (pTBNA first 61, pTBNA last 40). Overall diagnostic yield was 66.3%, with no significant difference between groups (64% vs 70% p=0.528) or prespecified subgroups according to sampling order. 70 lesions had an end diagnosis of malignancy, of which 50 were correctly diagnosed (71.4%). TBLBx (49/96, 49%) and pTBNA (48/101, 47.5%) had the highest individual positive yield. For 12 (11.9%) participants, pTBNA was the only positive sample. ROSE was associated with both positive procedural diagnosis (p=0.019) and pTBNA positive samples (p=0.004). Pneumothorax occurred in 4% and moderate bleeding in 5%. 13% had an unplanned admission within one month of bronchoscopy.**Conclusion:** In this pilot study, noting the small numbers and limited power, adding pTBNA to usual biopsy tools was feasible, and the use of pTBNA improved diagnostic yield (11.9% additional diagnoses) compared to conventional sampling via an ultrathin bronchoscope guided by rEBUS, regardless of sampling order.**Grant Support:** Loan equipment support via Olympus AustraliaKevin Kennedy Research Fellowship via TPCH Foundation |