Physician experiences and preferences in peripheral bronchoscopy for diagnosing patients with solitary pulmonary nodules suspected of lung cancer: a multi-country, cross-sectional survey

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1 Objective

- To understand physicians´ attitudes towards peripheral bronchoscopy as alternative to transthoracic needle aspiration (TTNA), as well as the benefits of adding radial endobronchial ultrasound (rEBUS) to the procedure.

2 Background

- Patients with a solitary pulmonary nodule detected in their lungs require a biopsy to determine if the nodule is malignant[1].
- This is most frequently done by TTNA; however, this is an invasive procedure associated with high complication rates, especially for pneumothoraxes with around 20-25%[2,3].
- Peripheral bronchoscopy is a minimally invasive alternative which allows samples to be taken with significantly lower complication rates. In combination with other tools, such rEBUS, its diagnostic yield can be further increased[4].
- This means that potentially more patients could have their biopsy taken endobronchially than currently is the case.

3 Methods

- An online cross-sectional questionnaire, established in Question Pro, to gather survey data was distributed among pulmonologists in Europe and Africa with experience in taking bronchoscopic lung biopsies.
- The survey was available in English, French, German, and Spanish.
- Various question-formats were used, including Likert-scales, open-ended, and closed-ended questions.
- The survey was open from October 2022 to March 2023.
- Responses were analyzed anonymously using descriptive statistics and Chi-Square tests with a significance level of $p<0.05$.

4 Results

- A total number of 50 responses were received.
- The respondents were based in 9 countries (France n=13, UK n=13, Germany n=10, Spain n=9, and Austria, the Netherlands, Slovenia, South Africa, and Switzerland each n=1).
- The median weekly number of procedures per center was 9.6 for endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) and 8.1 for peripheral bronchoscopies.

Peripheral bronchoscopy

- Respondents stated that the top patient characteristic for which they had a preference to perform peripheral bronchoscopy as first approach (in-stead of TTNA or surgery) were patients where they felt confident, they could reach the lesion with peripheral bronchoscopy (**Figure a, f**).
- The most important aspect of peripheral bronchoscopy procedures in daily practice, according to the respondents, was diagnostic yield (**Figure b**).
- The main reasons for adding peripheral bronchoscopy to their portfolio for the respondents was its minimally invasiveness (**Figure c, f**).

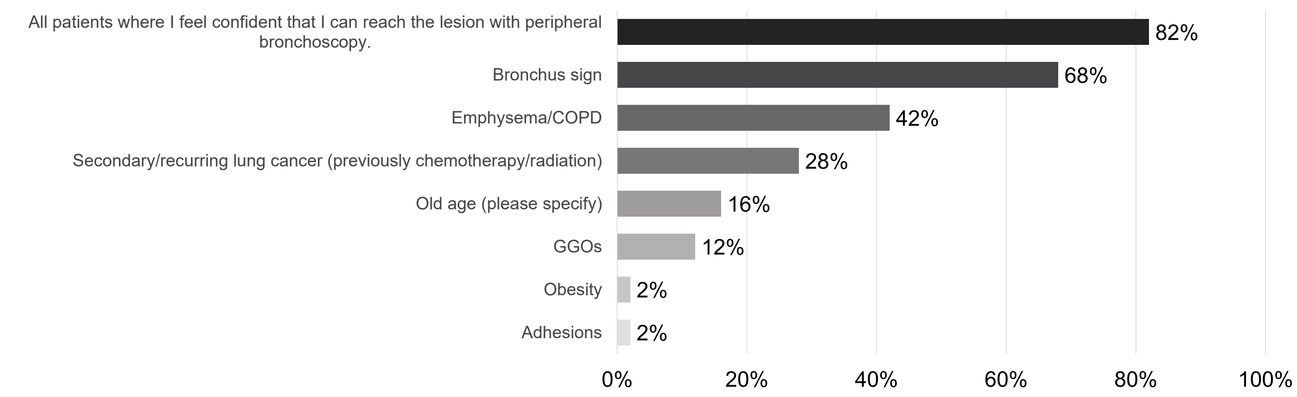
Radial endobronchial ultrasound (rEBUS)

- 92% of respondents would recommend using rEBUS to a colleague for sampling procedures in the periphery of the lung (**Figure d**).
  - The main reasons for their recommendation were rEBUS to increase diagnostic yield and for having real time confirmation (**Figure e, f**).

5 Conclusions

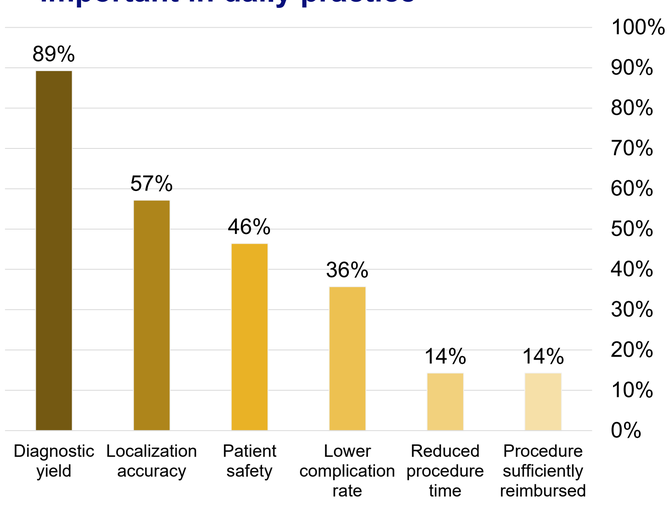
- A large proportion (82%) of respondents prefers to use peripheral bronchoscopy as a first approach for taking a biopsy of patients suspected of lung cancer, for patients they feel confident they can reach the lesion, compared to first using a surgical approach or transthoracic needle aspiration.
- Important aspects to the respondents were the minimally-invasiveness of the procedure, safety, diagnostic yield, as well as patient outcomes.
- Future research should be conducted to analyse if peripheral bronchoscopy – being considered a minimally-invasive and safe procedure by the respondents – saves costs to the health system and health care providers by preventing complications.

a Patient characteristics for performing peripheral bronchoscopy



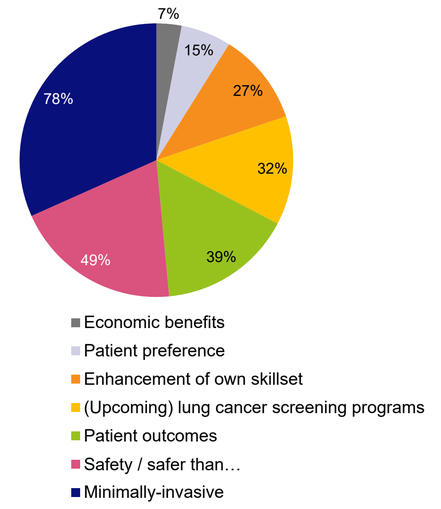
Respondents were asked for the patient characteristics for which they had a preference to perform peripheral bronchoscopy as first approach (e.g., instead of TTNA or surgery). Respondents could choose all answers that applied. The bars illustrate how many per cent of the respondents selected each statement. N=50. GGO: ground-glass opacity, TTNA: Transthoracic needle aspiration

b Aspects of peripheral bronchoscopy most important in daily practice



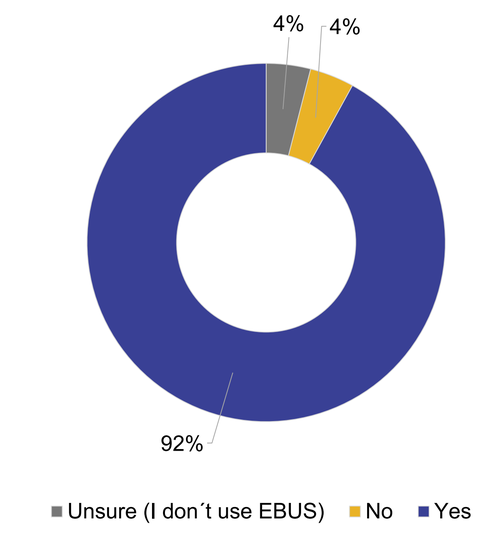
Respondents were asked to select all aspects of peripheral bronchoscopy procedures they experienced as most important in their daily practice. Respondents could choose all answers that applied. The bars illustrate how many per cent of the respondents selected each statement. N=28.

c Reasons for adding peripheral bronchoscopy to portfolio



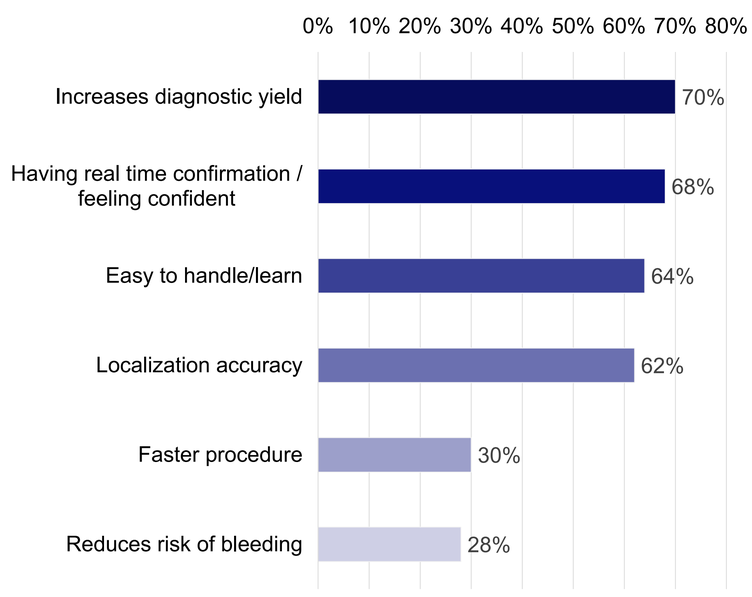
Respondents were asked for their main reasons for adding peripheral bronchoscopy to their bronchoscopy solution portfolio. Respondents could choose all answers that applied. Each slice shows the percentage of respondents selecting the answer. N=41

d Recommendations for rEBUS



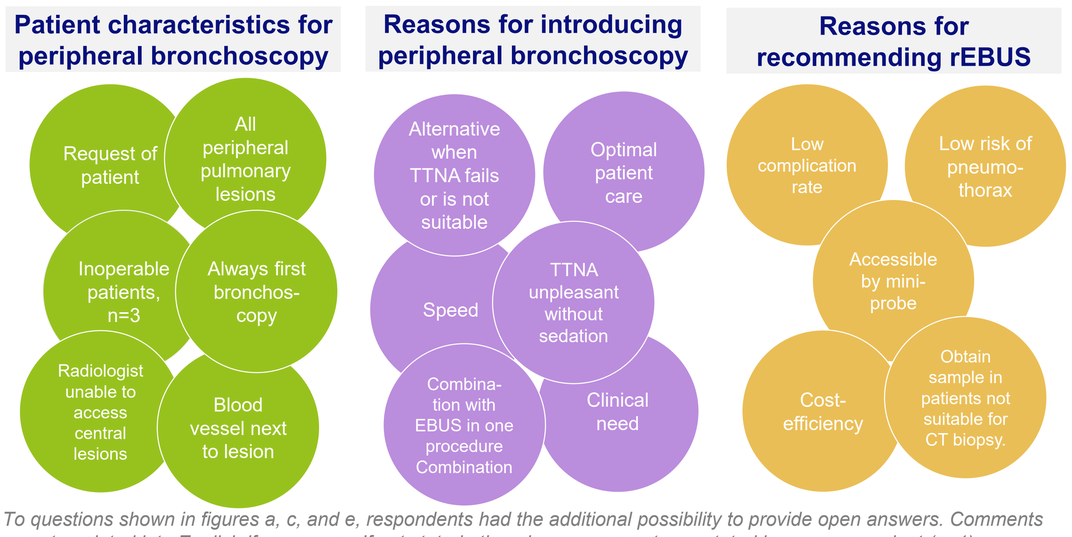
Respondents were asked whether they recommended using radial EBUS to a colleague for sampling procedures in the periphery of the lung. A chi square test ($\chi 2$) was used to measure the likelihood that agreement (unsure/no and yes) with each statement was due to random chance (assuming normally distributed, one degree of freedom). $p<0.01$. N=50.

e Reasons for recommending rEBUS



Respondents were asked for the reasons for which they would recommend using radial EBUS to a colleague for sampling procedures in the periphery of the lung. Respondents could choose all answers that applied. The bars show the level of agreement per aspect. N=50.

f Open answers stated by respondents to a, c, and e



To questions shown in figures a, c, and e, respondents had the additional possibility to provide open answers. Comments were translated into English if necessary. If not stated otherwise, a comment was stated by one respondent (n=1).

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