

A Meta-analysis on Utility of Bronchoscopy in the Investigation of Lung Cancer in Patients with Haemoptysis and a Normal CT

Thorax



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Background

In patients with haemoptysis, many healthcare systems support bronchoscopy regardless of CT findings [1]. However, recent studies suggest that CT alone could be sufficient to rule out lung cancer in patients with haemoptysis [2]. This has never been systematically assessed.

Methods

A systematic search was performed of the following databases: EBSCO (Medline), PubMed, Academic Search Complete, CINAHL, Cochrane Library and Embase. Key search terms used were "haemoptysis," "lung cancer," "CT scan" and "bronchoscopy". The studies identified were screened using predefined inclusion and exclusion criteria and reported as per PRISMA [3]. The QUADAS-2 tool on RevMan was used to assess the quality of studies [4]. Meta-Disc 1.4 software was used to test for heterogeneity and to summarise the test performance characteristics using forest plots and summary receiver operating characteristic (SROC) curves. SPSS was used to compare the diagnostic accuracy of CT and bronchoscopy

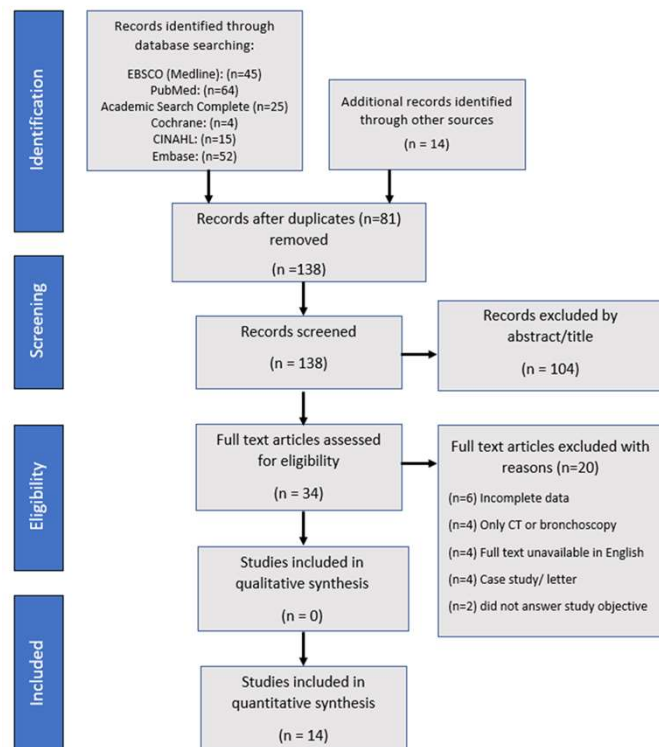
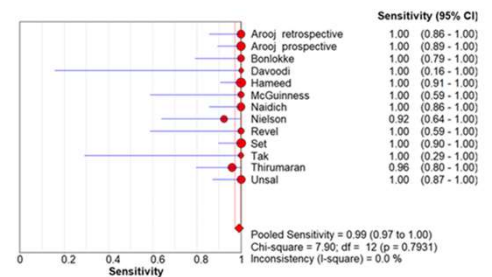


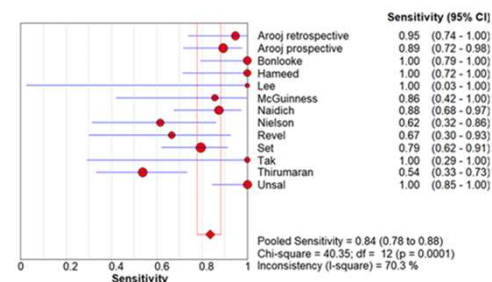
figure 1: PRISMA flowchart outlining the study selection process

Results

A total of 14 studies (2,960 patients) were included. The pooled sensitivities for detection of lung cancer using CT scan and bronchoscopy were 0.99 (95% CI: 0.97-1.00) and 0.84 (95% CI: 0.78 - 0.88) respectively. The sensitivity of CT was higher than that of bronchoscopy (P< 0.001). The pooled specificities for CT scan and bronchoscopy were 0.99 (95% CI: 0.99-1.00) and 1.00 (95% CI: 0.99 - 1.00) respectively. Of 2960 patients studied 257 had lung cancer (8.7%). 254 of these had a CT thorax and CT scan was false negative in 4/254 (1.6%) with bronchoscopy only identifying one cancer with a normal CT (0.4%)



(a) CT scan sensitivity



(b) Bronchoscopy sensitivity

Conclusion

CT scan showed a higher diagnostic accuracy than bronchoscopy. The study indicated that bronchoscopy offers insignificant additional value in the investigation of lung cancer in patients with haemoptysis and a negative CT scan.

Bibliography

- Larici AR, Franchi P, Occhipinti M, et al. Diagnosis and management of hemoptysis. *Diagnostic and Interventional Radiology*. 2014;20(4). doi:10.5152/dir.2014.13426
- Arooj P, Bredin E, Henry MT, et al. Bronchoscopy in the investigation of outpatients with hemoptysis at a lung cancer clinic. *Respir Med*. 2018;139:1-5. doi:10.1016/j.rmed.2018.04.007
- Moher D, Liberati A, Tetzlaff J, et al. Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Med*. 2009;6(7). doi:10.1371/journal.pmed.1000097
- Whiting PF, Rutjes AWS, Westwood ME, et al. Quadas-2: A revised tool for the quality assessment of diagnostic accuracy studies. *Ann Intern Med*. 2011;155(8). doi:10.7326/0003-4819-155-8-201110180-00009