Parenchymal haemorrhage post CT guided percutaneous lung biopsy. A frequent but insignificant complication?

Khoren Abelian[1], Thomas Halloran[2], Diana Penha[1], Eric Guedes-Pinto[3], Marousa Ntouskou[1], Klaus Irion[4]

[1]Liverpool Heart and Chest Hospital NHS Trust
[2]Royal Liverpool and Broadgreen NHS Trust
[3]Aintree University Hospital NHS Trust
[4] Manchester University NHS Trust

BSTI Annual Meeting 19th November 2020

Introduction

- Computed tomography (CT) guided percutaneous biopsy is a minimally invasive procedure that is an indispensable tool in the diagnosis of thoracic lesions

- The diagnostic accuracy and complication rate is determined by size and site of lesion, distance from the pleura and presence of intervening lung tissue, size of needle and experience of the operator

Purpose

- To review CT guided lung biopsies performed across the two tertiary hospitals in Merseyside, United Kingdom (UK)
- To determine the rate of potential complications of CT guided lung biopsies

Standards and Guidelines

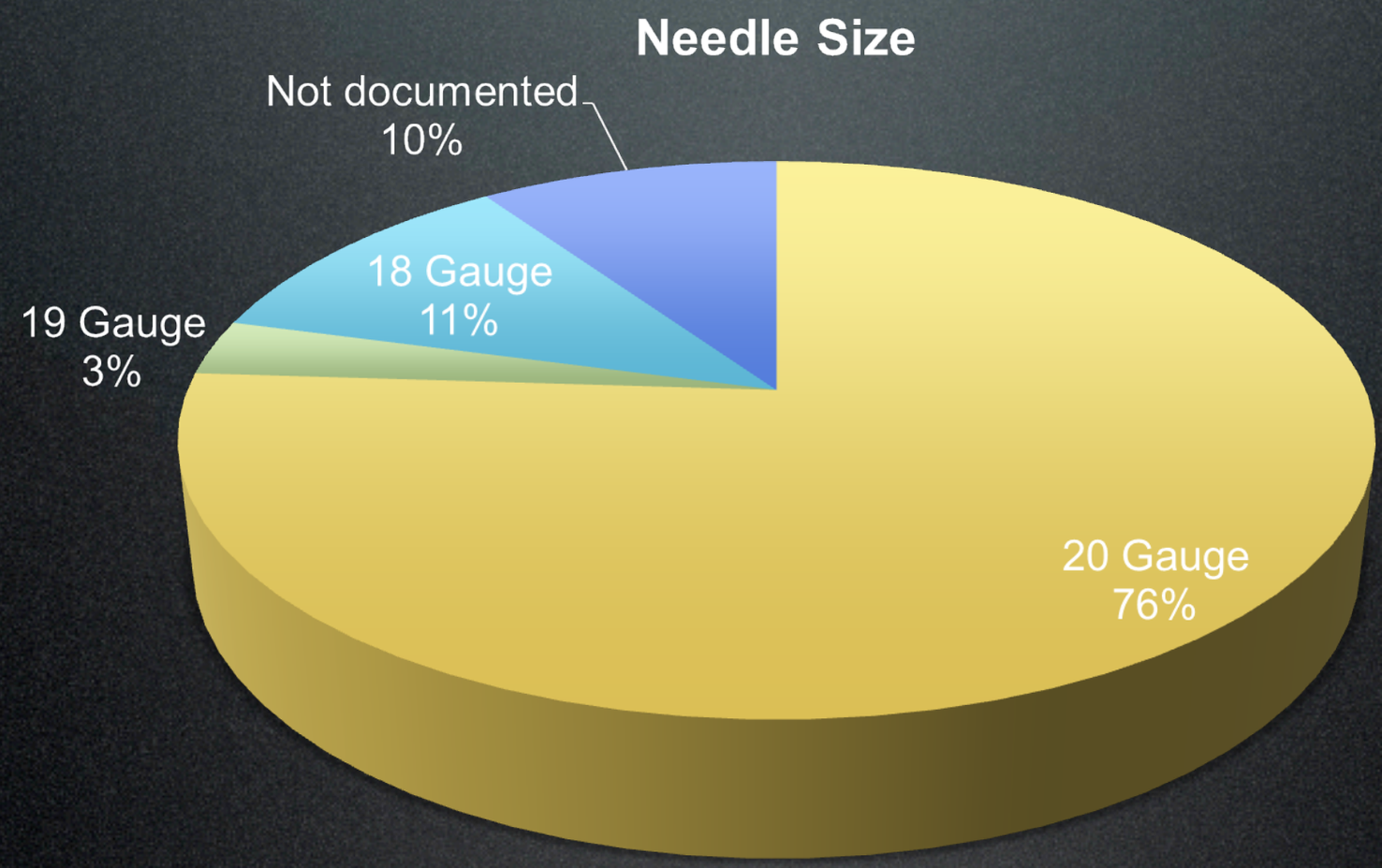
- Diagnostic adequacy – 90% of samples should be sufficient for histological diagnosis
- Complication rates should be as follows:
- •Pneumothorax < 20%
- •Pneumothorax needing drainage < 3%
- •Haemoptysis < 5%
- •Death< 0.15%
- Guidelines for Radiologically Guided Lung Biopsy. British Thoracic Society Guidelines. Thorax 2003; 58: 920 – 936.

Methods and Materials

- Retrospective review of CT guided biopsies performed from October 2018 to December 2019
- Clinical reports in the Radiology Information System (PACS) were reviewed and procedural details were collected
- The CT scans and the chest X-ray (CXR) routinely performed 2 hours after the biopsy procedure were reviewed by two experienced chest radiologists and evidence of immediate complications was collected
- Electronic patient information system (EPR) was examined for delayed complications. Histology reports were checked for diagnostic

Results
Needle Size

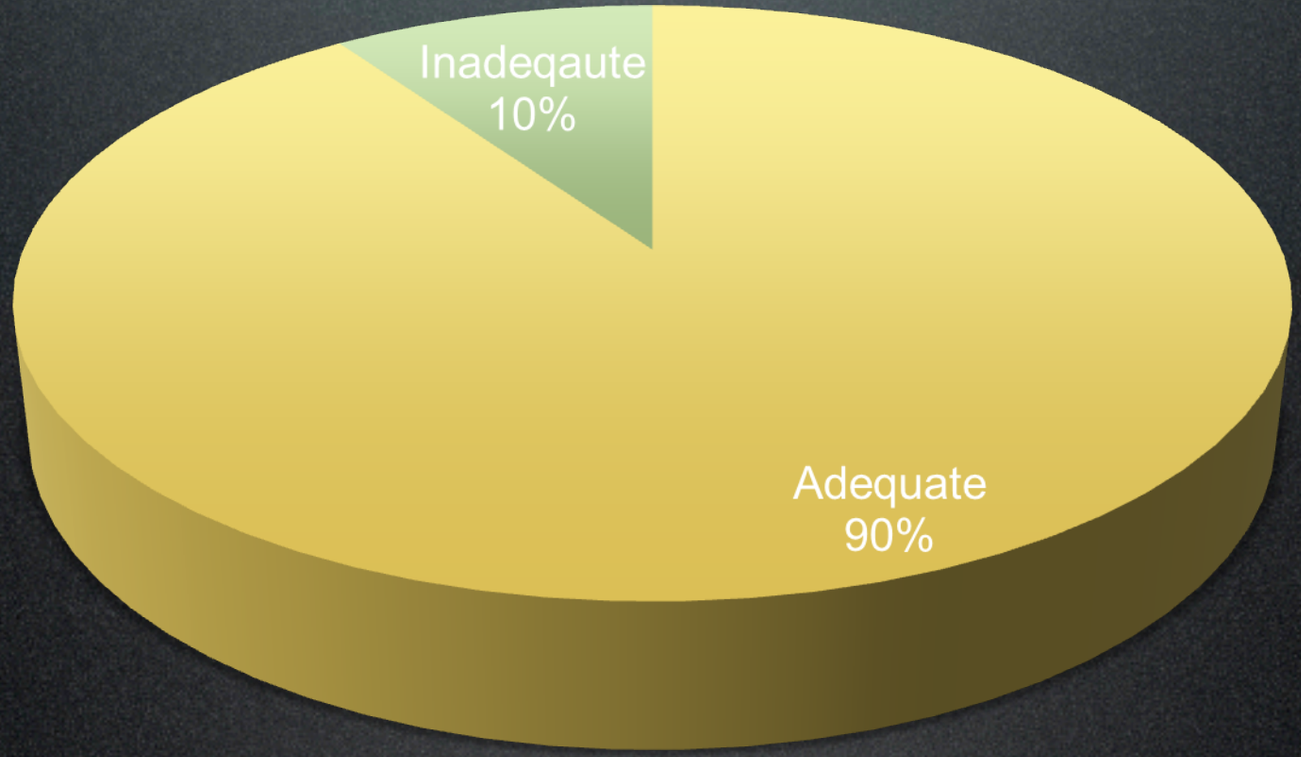
A total of 125 cases of CT guided percutaneous lung biopsies were performed within the mentioned timeframe across the two sites



Results
Diagnostic Accuracy

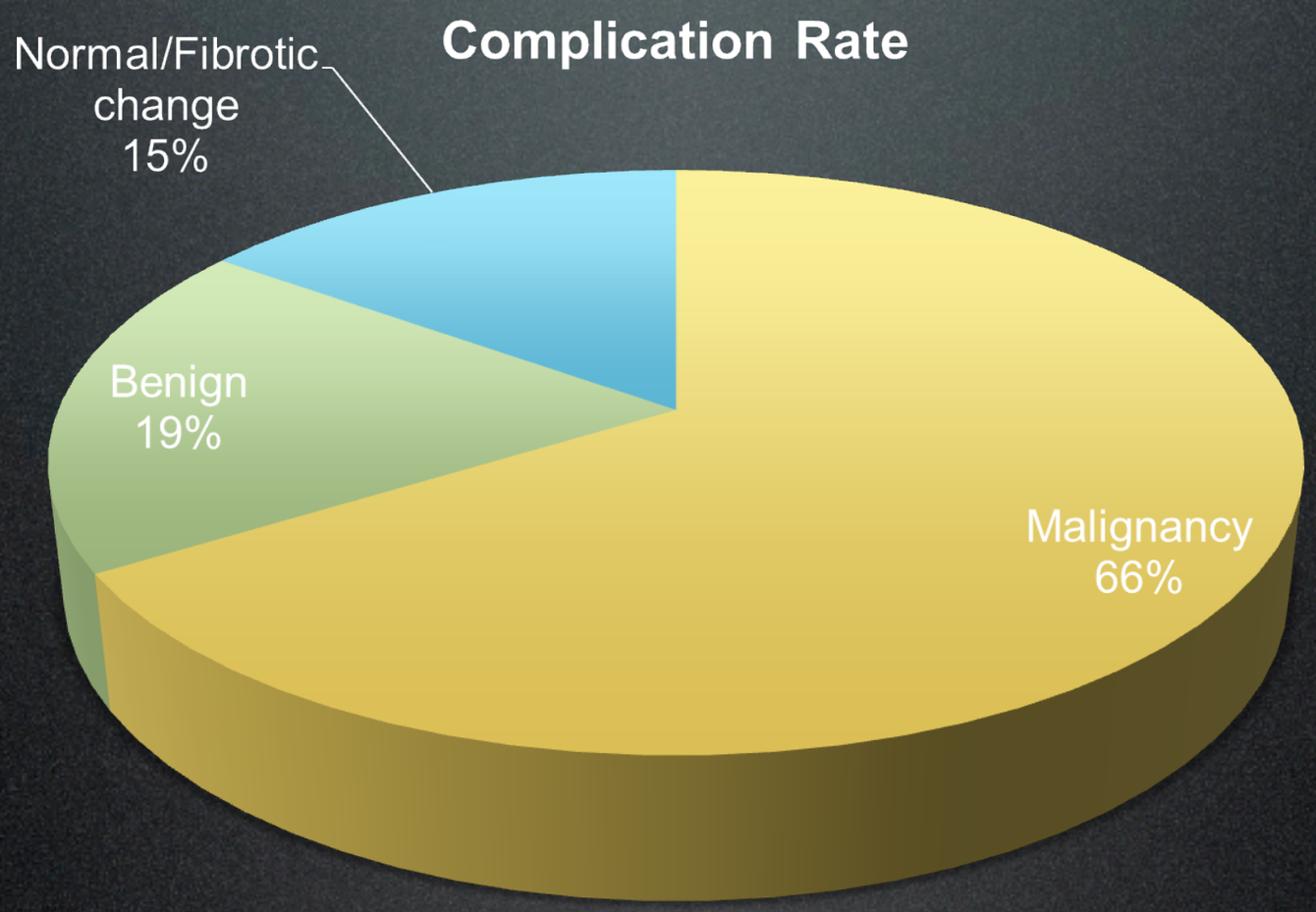
A total of 125 cases of CT guided percutaneous lung biopsies were performed within the mentioned timeframe across the two sites

Diagnostic Accuracy

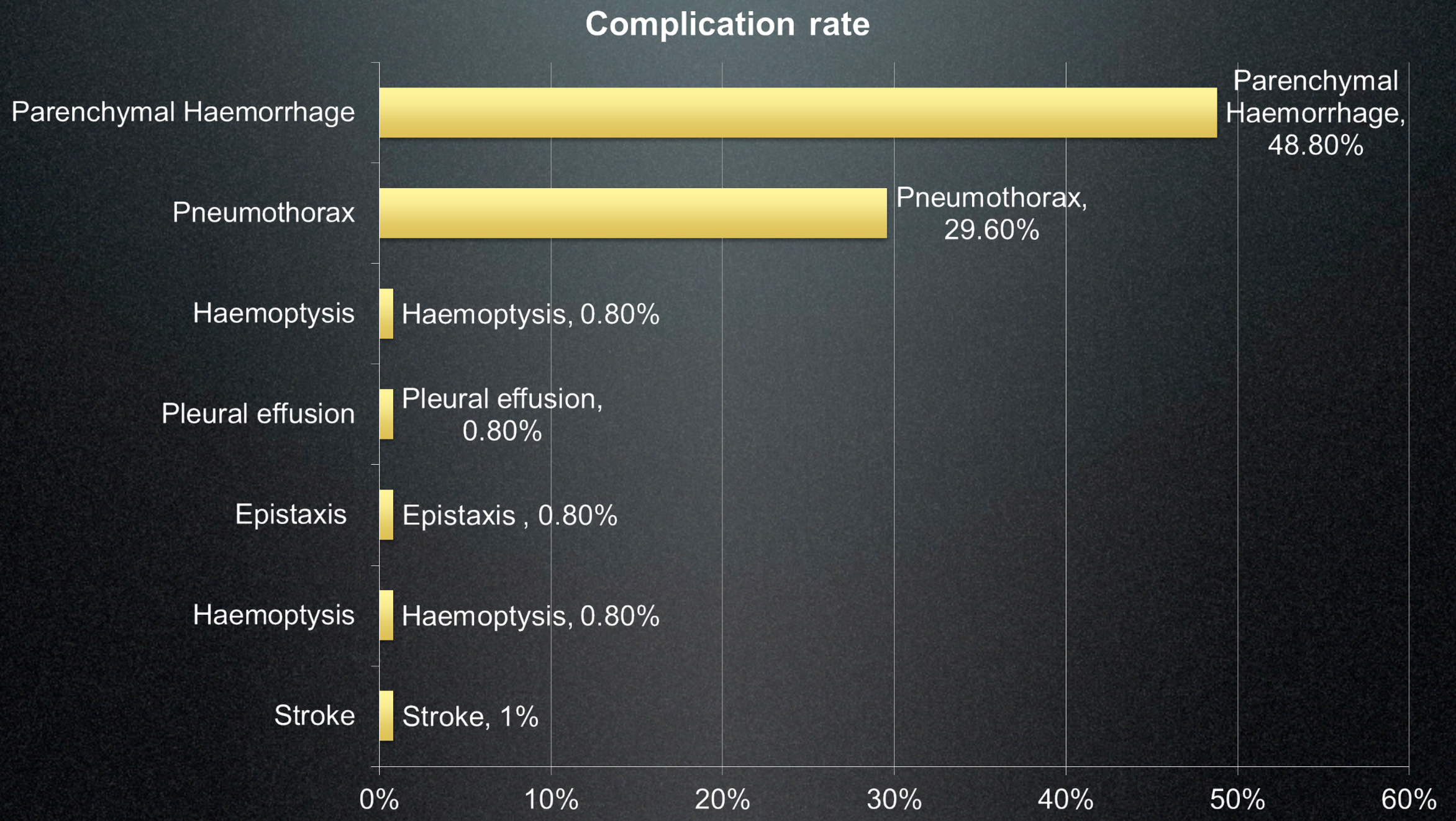


Results
Histology

A total of 125 cases of CT guided percutaneous lung biopsies were performed within the mentioned timeframe across the two sites



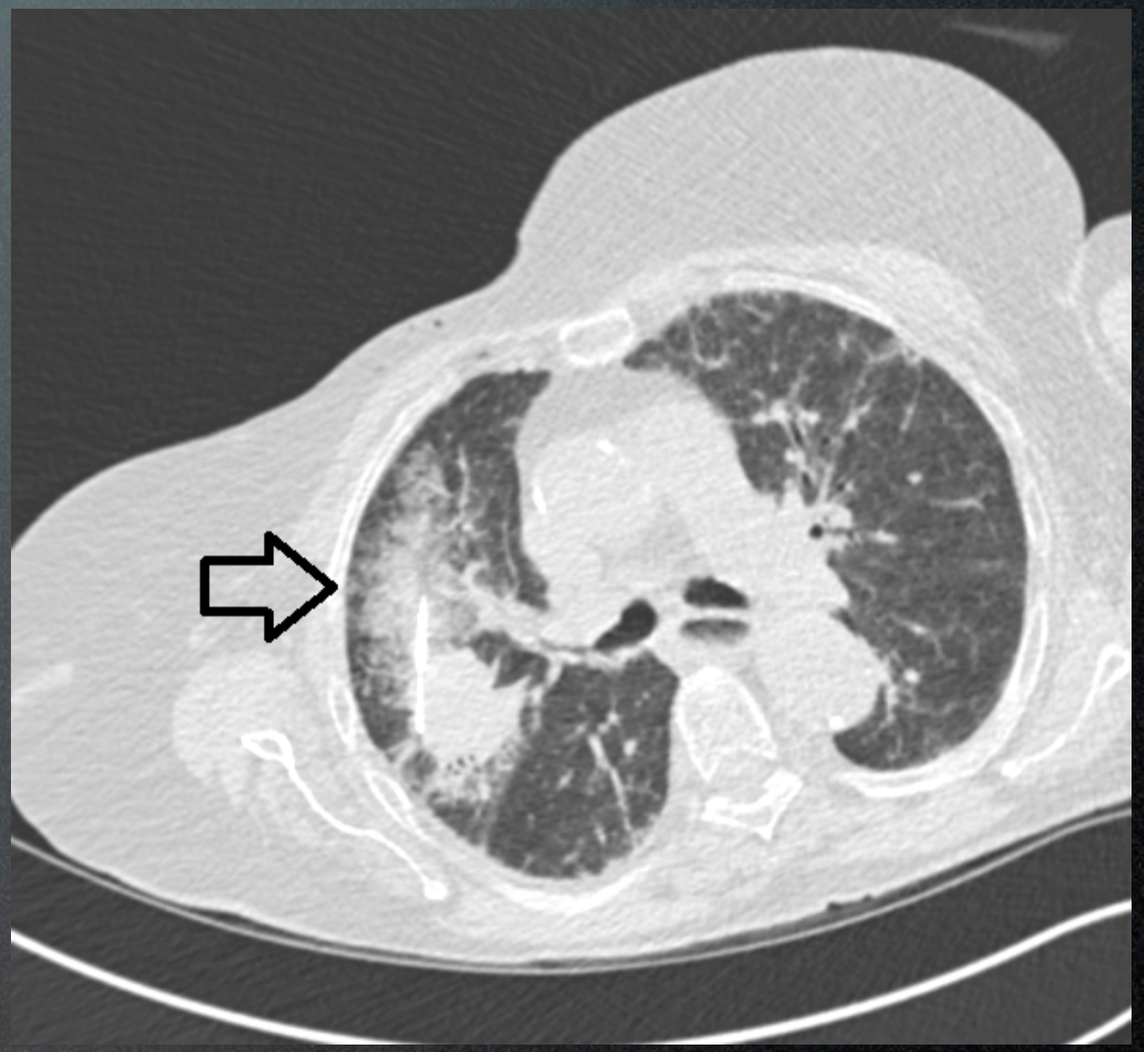
Complications



Complications

- Complication rates documented for pneumothorax were self-limiting and none requiring the insertion of a chest drain
- Parenchymal haemorrhage was self-limited in all cases
- Haemoptysis and self-limited nosebleed occurred in one case each.
- Pleural effusion was documented in another case, not requiring the insertion of a chest drain
- Stroke occurred in one case, 3 hours after the biopsy procedure

Does the technique correlate with the rate of complications?



Post-procedural haemorrhage in 82-year-old female who underwent CT guided percutaneous biopsy of the right lung lesion (black arrow)

Conclusion

- The results broadly comply with the standards, with complication rates regarding haemoptysis within acceptable results. Pneumothorax occurred at a slightly higher rate (29.6%)
- The complication rate of parenchymal haemorrhage was significantly higher, although all were self-limited, and none led to any significant clinical complication
- We propose that parenchymal haemorrhage is under-reported in the published literature and mostly clinically not significant

Recommendations

- We will assess the biopsy technique used, correlate it with the risk of complications and suggest technique modifications to reduce the incidence of parenchymal haemorrhage and pneumothorax in particular
- Re-audit