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Title: Importance of further follow up in patients with negative histology from CT guided biopsy

Dr. Axel 18835 Sylvan axelsylvan@doctors.org.uk MD <sup>1</sup>, Dr. Yin 18836 Liu yin.liu01@gmail.com MD <sup>1</sup>, Dr. Tom 18837 Houghton tom.houghton@wwl.nhs.uk MD <sup>2</sup>, Dr. Choong 18838 Poon choong.poon@wwl.nhs.uk MD <sup>2</sup>, Dr. Ram 18839 Sundar ram.sundar@wwl.nhs.uk MD <sup>1</sup> and Dr. Imran 18840 Aziz imran.aziz@wwl.nhs.uk MD <sup>1</sup>. <sup>1</sup> Respiratory Medicine, Royal Albert Edward Infirmary, Wigan, United Kingdom, WN12NN and <sup>2</sup> Radiology, Royal Albert Edward Infirmary, Wigan, United Kingdom, WN12NN .

**Body:** Background: Obtaining conclusive histology to diagnose lung cancer is an important part of the management of potential lung cancer patients. Due to recent advancement in the techniques CT guided biopsy is becoming increasingly important in obtaining histology samples. We describe our experience of usefulness of CT guided biopsy samples over 4 years and follow-up of negative histology samples in suspected lung cancer patients. Results: We collected samples over 4 years (2008-2011) of CT guided biopsy booked in our hospital. 314 procedures were planned in 313 patients. 292 procedures were carried out. The main reason for not carrying out the procedure was shrinkage of the mass seen on the day of the procedure. 234/292 (80.1%) confirmed the diagnosis of lung cancer. 10/292 (3.4%) lead to diagnosis of other cancers (myeloma, metastatic cancer, lymphoma). 42/292 (14.8%) showed non-cancers (mainly inflammation). The biopsy was inconclusive in 6/292 (2%) samples. The 81 patients who did not have a biopsy or were labelled as non-lung cancers, underwent further investigation or had clinical diagnosis due to ill health. 26/81 (32.1%) had lung cancer, 14/75 (17.3%) had other cancers, 41/81 (50.6%) did not have a cancer diagnosis after follow up. Conclusions: We have shown that CT guided biopsy provides us with good histology samples and if correct patients are identified the histological diagnosis rate is greater than 90%. At the same time the patients with a high suspicion and negative biopsy have approximately 1 in 3 chance of having a lung cancer. It is therefore recommended that patients with negative histology should have further diagnostic tests.