

CT-guided Needle biopsies of Lung Nodules

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Data Source: Cancer registry and radiology information on lung cancers & lung nodules for 1/5/2005 to 7/11/2006.

Reason for Report: To determine if locally there are significant risks of false negative biopsies and procedural complications such as pneumothorax. As part of the “Lung Cancer Care Initiative”, the cardiothoracic surgeons stated, based on their specialty standards: “In patients with a lesion that is even moderately suspicious for lung cancer, who appear to have limited diseaseCT-guided biopsy has no role. These patients should undergo excisional biopsy and subsequent lobectomy if a lung cancer is confirmed. For the patients with a single pulmonary node who are operable candidates, CT-guided biopsy is NOT indicated. In facilities with full Cardiothoracic Surgical capability, such as ours, it is therefore NOT necessary to obtain a CT-guided biopsy of a solitary pulmonary nodule prior to referral for surgical evaluation. The significant risks of false negative biopsy and procedural complication such as pneumothorax have contributed to this recommendation.” The stated cardiovascular surgical results claim a 20-30% false negative rate. Literature search found a statement in a pathology document that stated: The FN test result rate of CT-guided biopsy is high (range, 0.20 to 0.30).

Findings:

Data at SJH: All CT-directed lung biopsies from 1/05 – 7/06: _____ (actual number)

True positive rate	93%	True pos rate for potentially resectable tumors (Stages up to 3A)	96%
False negative rate	4%	False negative rate for potentially resectable tumors	0%
Equivocal rate	3%	Equivocal rate for potentially resectable tumors	4%

Time from initial identification on imaging to CT-guided biopsy:

Mean=11 days

Median=9 days

Mode= 1 day

Pneumothorax rate at SJH is 30%. The range quoted in the literature is 8-64%
Overall rate of biopsies requiring chest tube at SJH is 10%. The range quoted in the literature is 2-15%. At the Roswell Park Cancer Center, the most recent QA report reviewed 160 CT-guided lung biopsies and reported a 97% diagnostic accuracy rate. (personal communication)

Conclusions: CT-directed lung biopsies performed at St. Joseph Hospital (SJH) are within the range of complications quoted in the literature. CT-directed biopsies performed at SJH were also in the range of diagnostic accuracy quoted in the literature. The discrepancy between the cardiovascular surgeons findings and the good results at SJH are due to the cardiovascular surgery finding being fine needle aspiration biopsies. SJH performs core biopsies with the pathologist present.

Therefore CT-directed lung biopsies are safe and accurate and should be considered in the work up of a possible lung cancer.

References:

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4. Laurent, F, Michael, P Latrabe, v, et al (1999) Pneumothorax and chest tube placement after CT-guided transthoracic lung biopsy using a coaxial technique: incidence and risk factors. AJR Am J Roentgenol 172,1049-1053