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Percutaneous needle aspiration for diagnosis of pulmonary infection

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CT guided percutaneous needle aspiration, immunocompromise, pulmonary infection

Comments

Although not specifically studying intensive care unit (ICU) patients, this paper is of interest as it describes a novel method of obtaining bacteriological samples. The yield of this study was much higher than in previously published series (79.2% versus 42-44%), this may be due to the use of empirical antibiotic therapy. If this is the case it may limit the application to patients with a very high level of antibiotic exposure. In this study, however, there was no correlation between antibiotic therapy and aspiration yield. Most noticeably the complication rate of this procedure was very low. Open lung biopsy carries a 8-20% complication rate whereas CT guided needle aspiration carries a 1.1% complication rate. The yield of the two techniques is similar (at least in this series). It appears that CT guided needle aspiration may have an application to obtaining a definitive diagnosis in ICU patients with pulmonary infection.

Introduction

Pulmonary infections are a common cause of morbidity in immunocompromised patients. The use of empirical treatment can be potentially hazardous and so a bacterial diagnosis is of great benefit. Techniques such as bronchoalveolar lavage (BAL) and nasopharyngeal aspiration may produce contaminated samples and are difficult in nonintubated patients. Open lung biopsy is sometimes employed for diagnosis but has a high complication rate (8-20%). CT guided percutaneous needle biopsy has not been previously studied in advancing the microbiological diagnosis in such patients.

Methods

- Retrospective review of 21 patients (24 procedures)

- Target lesion located with local anaesthesia, a 20G needle under CT guidance
- Aspirated material visually inspected and aspirate repeated if sample appeared inadequate
- Cytologic evaluation and culture for aerobic and anaerobic bacteria, *Mycobacterium* sp and fungi were performed
- Presence and duration of empiric antibiotic therapy prior to investigation was recorded
- Patients were assigned to positive and negative yield groups

Results

Identification of one or more species of pathogens was made in 19 of 24 samples (79.2%) Five aspirates yielded mixed inflammatory cells and had no bacterial or fungal growth. Bacteria isolated included *Staphylococcus aureus* (4), *Mycobacterium tuberculosis* (3), *Pseudomonas aeruginosa* (2), *Streptococcus pneumoniae* (1) and *Klebsiella pneumoniae* (1). Fungi isolated were *Aspergillus fumigatus* (7), *Cryptococcus neoformans* (1) and *Candida albicans* (1). Two organisms were found in one patient. A small asymptomatic pneumothorax occurred on one occasion but did not require treatment.

References

1. Hwang SS, Kim HH, Park SH, Jung JI, Jang HS: The value of CT guided percutaneous needle aspiration in immunocompromised patients with suspected pulmonary infection. *Am J Roentgenol.* 2000, 175: 235-238.