

学位論文の要旨

氏名 中村 恩

学位論文名 Risk Factors Influencing Chest Tube Placement Among Patients With Pneumothorax Because of CT-Guided Needle Biopsy of the Lung

発表雑誌名 Journal of Medical Imaging and Radiation Oncology
(巻: 初頁～終頁等, 年) (55:474-478, 2011)

著者名
Megumi Nakamura, Takeshi Yoshizako, Shingo Koyama,
Hajime Kitagaki

論文内容の要旨

INTRODUCTION

Recently, many lung tumor was detected under multi-detector CT and many times of percutaneous biopsy was undergone. Pneumothorax is major complication of lung needle biopsy and its incidence rate has been reported to be 5-61%. Most pneumothorax were not needed chest tube for care. But severe pneumothorax were needed. Real-time image display with CT fluoroscopy has been shown to reduce the procedure time for the biopsy and the number of pleural punctures. The frequency of pneumothorax in conventional CT-guided needle biopsy has been reported to be affected by many factors: lesion size, subpleural location, lesion depth, emphysema, angle of needle-pleural puncture and postbiopsy position. The purpose of this study was to evaluate the risk factors for developing a pneumothorax requiring chest tube placement in patients undergoing CT-guided needle biopsy of the lung.

MATERIALS AND METHODS

In 150 patients, 156 CT-guided needle biopsies of the lung were performed. All patients underwent posteroanterior and lateral chest radiography in the erect position before the biopsy procedure. All CT-guided biopsy examinations were performed using noncoaxial biopsy

technique with 9–15-cm and 20- and/or 22-gauge Westcott needles (MD TECH, Gainesville, FL, USA). If the patients were found to have a large pneumothorax, if the pneumothorax increased in size to >30% on follow-up chest radiographs or if the patient became symptomatic, a chest tube was inserted. Patient age, position during biopsy, presence of emphysema, lesion size, depth and location, number of pleural punctures and pleural-puncture angle were analysed as independent risk factors for chest tube placement for pneumothorax.

RESULTS AND DISCUSSION

Pneumothorax occurred in 93 of 156 procedures (59.6%), and chest tube placement was required in 12 cases (7.7% of all biopsies, 12.9% of all pneumothoraces). Among patients with a pneumothorax, the proportion of cases biopsied in the supine position was significantly greater in the chest tube placement group (58.3%; 7/12) than in the nonchest tube placement group (28.4%; 23/81) ($p=0.026$). The nonchest tube group consisted of the remaining 81 cases (51.9% of all biopsies, 87.1% of all pneumothoraces). The nonchest tube group included 53 males and 28 females; 64 of the lesions were diagnosed as malignant, 15 were diagnosed as benign and two had insufficient material to make a diagnosis. Patient age, presence of emphysema, lesion size, needle path length, location of pulmonary lesions, number of pleural punctures and the smallest angle between the pleura and the needle showed no significant differences between the two groups.

CONCLUSION

Chest tube insertion was required more frequently in patients biopsied in the supine versus prone position. Our data suggest that a supine position during biopsy may increase the risk of a severe pneumothorax that requires chest tube placement among patients. The prone position is considered preferable to reduce the risk of significant pneumothorax requiring chest tube insertion.