ORIGINAL ARTICLE

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Alveolar epithelial permeability in patients with primary spontaneous pneumothorax as determined by Tc-99m DTPA aerosol scintigraphy

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Purpose: Primary spontaneous pneumothorax (PSP) occurs subsequent to a disruption in the continuity of visceral pleura and escape of air into the pleural space. The cause of PSP is most often the rupture of subpleural blebs or bullae. It is usually difficult to detect evidence of pulmonary pathology. The purposes of the present study were (1) to investigate the changes of pulmonary alveolar epithelial permeability in patients with PSP as determined by Tc-99m DTPA aerosol lung scintigraphy, (2) to assess whether or not some differences exist between apical and basal parts of the lungs, and (3) to determine the relationship between the clearance rate of Tc-99m DTPA and the PFT results, the recurrence rate of PSP, and the percentage of pneumothorax in affected lung. ***Material and Methods:*** Thirteen PSP patients (two females, 11 males; mean age 32.5 ± 11.8 years) with normal chest X-ray were studied. Thirteen healthy non-smoking volunteers (1 female, 12 males; mean age, 35.8 ± 10 years) were selected as a control group. Tc-99m DTPA aerosol lung scintigraphy and PFT were performed in all patients and controls. Clearance rates (%/min) of Tc-99m DTPA aerosol in right and left lung field, and apical and basal parts of each lung were calculated from dynamic images for 15 min. ***Results:*** There was no significant difference ($p > 0.05$) between patients and controls, or between apical and basal parts of each lung. No correlation was found between the clearance rate of Tc-99m DTPA and PFT results, the recurrence rate of PSP, or the percentage of pneumothorax. ***Conclusion:*** This study demonstrates that pulmonary epithelial permeability is not altered in PSP patients; the clearance rate of Tc-99m DTPA shows no difference between apical and basal parts of each lung.

Key words: primary spontaneous pneumothorax, pulmonary epithelial permeability, Tc-99m DTPA aerosol lung scintigraphy