ORIGINAL ARTICLE

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Evaluation of alveolo-capillary permeability in thyrotoxicosis using Tc-99m DTPA aerosol scintigraphy

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Surfactant secreted from type II pneumocytes plays an important role in alveolo-capillary permeability. In thyrotoxicosis, high levels of T3 receptors detected at these cells might affect the alveolo-capillary permeability due to increased serum thyroid hormone levels. The results by CO-diffusion capacity measurement in thyrotoxicosis are conflicting. Changes in alveolo-capillary membrane permeability resulting from thyrotoxicosis are not well established yet. This prompted us to investigate the alveolo-capillary permeability in thyrotoxic patients in comparison with CO-diffusing capacity. For this aim twenty-two non-smoking thyrotoxic patients (before treatment) and fifteen healthy voluntary controls underwent ^{99m}Tc-DTPA aerosol scintigraphy. CO-diffusing and pulmonary function tests were performed in all subjects. After ventilation of radiotracer through a nebulizer for 15 minutes, 30 dynamic images (1 frame/minute) were taken from both lungs. ROI's were drawn over both lung areas, and the time-activity curves were generated. Then clearance half time ($CT_{1/2}$) for radioaerosol was obtained. $CT_{1/2}$ of thyrotoxic patients did not differ from that of the controls: 77.9 ± 25.9 min vs. 79.4 ± 22.3 min; $p > 0.05$. Similar result was found for CO-diffusion parameters. Also there was no significant correlation between $CT_{1/2}$ and CO-diffusion parameters. We concluded that in patients with thyrotoxicosis, the alveolo-capillary permeability is unaffected. Further experimental research is needed to establish the possible effects of thyroid hormones on alveolo-capillary membrane.

Key words: thyrotoxicosis, alveolo-capillary permeability, Tc-99m DTPA, aerosol scintigraphy