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Respiratory Reflexes (Breath Holding Time) in Leprosy

TO THE EDITOR:

Functional impairment of circulatory reflexes and decreased response of the cough receptors to irritant aerosols in patients with leprosy have been well documented ([2,4]). In this study we measured breath holding time (BHT) in 35 patients with leprosy and 20 healthy controls. BHT was measured on a low resistance spirometer at end-expiratory level (near functional residual capacity, FRC) and also at the maximal lung volume, i.e., near total lung capacity (TLC). A minimum of three readings was taken at each lung volume. Factors likely to affect the BHT such as motivation, endurance, and training were kept under control in so far as possible.

The patients and control subjects were matched equally as to socio-economic status, age, height, and weight; vital capacity was slightly higher in the control group. The mean BHT in the leprosy patients was 24.0 ± 6.8 seconds at end-expiratory level and 43.8 ± 9.4 seconds near TLC; corresponding values in the control subjects were 18.5 ± 6.1 seconds and 32.3 ± 10.0 seconds, respectively. The difference between the two groups was statistically significant ($p < 0.01$).

Breath holding and the final "break point" represent an interaction of a number of variables such as lung volume, alteration in alveolar-arterial gas tension and pH ([5]). By and large, a prolongation of the BHT indicates impairment of the pulmonary chemosensitivity function. The afferent impulses during a breath hold travel via the pulmonary vagal nerve fibers. In human experiments, blockage of the vagus nerves is followed by prolongation of the BHT ([1]). Histological studies have already shown involvement of the sympathetic and vagus nerves in leprosy ([3]). Therefore, our previous study and the present one are in agreement. We conclude that respiratory reflexes modulated by the vagal nerves are affected in patients suffering from leprosy.

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