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Vascular Effects of Irritation of the Tracheobronchial Tree with Acids or Alkalies in the Dog

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Irritation of the tracheo-bronchial tree with n/1 acids or alkalies caused pulmonary arterial pressure elevation of about five to eight mm Hg and simultaneous systemic pressure fall roughly twenty to fifty mm Hg on 230 dogs, narcotised with 0.10 g/kg chloralose. The irritating agents were injected through a tracheal cannula in a volume of 0.2 ml/kg. The pulmonary pressure rise lasted one or two minutes, while the systemic response was more prolonged (three to five minutes). The pulmonary "capillary" pressure remained unaltered, whereas the cardiac output (recorded by dye dilution) decreased slightly.

Identical effects could be produced with strong and weak acids (H_3PO_4, HCl, acetic, citric, ascorbic acid) or NaOH. Saturated NaCl solution influenced the systemic blood pressure only, while the pulmonary pressures did not change.

A different response was observed on unnarcotised dogs. After administration of 0.2 mg/kg curare, the animals were kept on artificial respiration, the irritation of the bronchial mucosa caused simultaneous pressure rise in the lesser and systemic circulations, too.

Bronchospasm and arterial hypoxia as causative factors could be excluded. After administration of five to eight mg/kg dibenamine or two to five mg/kg pendiomid the pressure rise in the lesser circulation was less pronounced, but the systemic pressure drop remained unaltered. An antihistaminic agent (Suprastin, "Richter") in doses sufficient to counteract the circulatory effects of one to ten μg/kg histamine, had a similar effect. In Starling's preparate, in fact, a diminished pulmonary effect could be produced.

Accordingly, it seems possible that both neural and humoral (or local) factors may be involved in the phenomenon observed.

Our experiments will be published in more detail in the Acta Medica Hungarica.

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