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CARTAS AL EDITOR

Carbachol Effect on Larynx Resistance in the Cat

It has previously been shown that larynx resistance modifications can be induced by mechanical stimulation of the upper respiratory airways epithelium and electrical stimulation of several nerves, as well as by histamine and atropine administration. Previous studies evidenced that any increase or decrease in airways resistance was always accompanied by an increase or decrease in larynx resistance (1-6).

The purpose of the experiments here reported was to study larynx resistance changes in cats evoked by carbachol (10 µg/kg i.v.) and by the administration of carbachol 30 minutes after ipratropium bromide (5 µg/kg i.v.), a well known muscarinic receptor antagonist which is used for the treatment of bronchoconstriction crisis.

Experiments were carried out in 6 cats, using isolated glottis technique. In order to evaluate larynx resistance, the subglottic pressure value, which in the con-

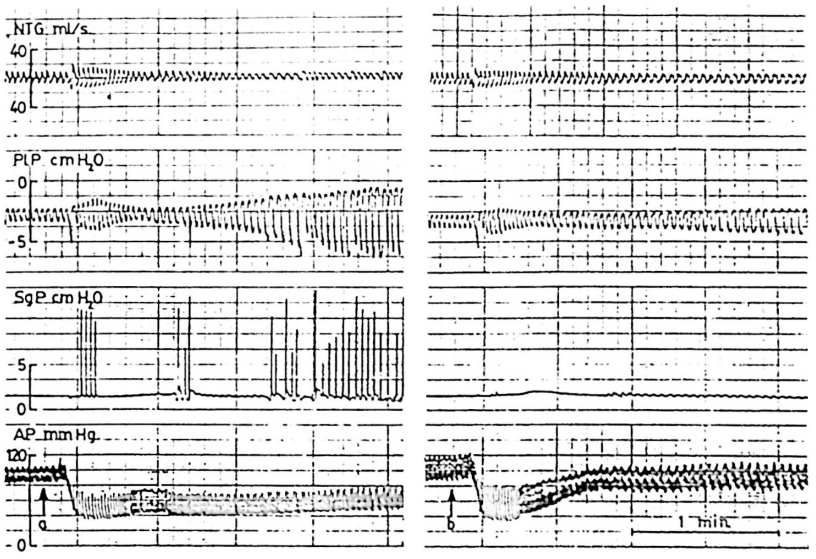

Fig. 1. *Effect of carbachol on larynx resistance in the cat.*
From the top the traces are: neumotacogram, pleural pressure, subglottic pressure and arterial pressure. Left-hand column carbachol (a), right-hand column carbachol 30 min after ipratropium bromide (b).

ditions of the experiments was always directly proportional to the resistance, has been used (3, 6). Intrapleural pressure was recorded through a catheter inserted into pleural cavity. Total lung resistance was calculated by the transpulmonary pressure/respiratory airflow relation (X, Y), recorded on a digital oscilloscope. Arterial blood pressure was measured by means of a catheter in femoral artery.

Two minutes after the administration of carbachol, an increase in subglottic pressure was produced (2.06 ± 0.59 cm H_2O, $p<0.01$) which was accompanied by several glottic closures (4.25 ± 1.47, $p<0.001$), coinciding with an increase in total lung resistance (1.45 ± 0.38 cm H_2O/l/s, $P<0.001$). These significant differences were maintained until 15 minutes after the administration of the drug (fig. 1).

Comparing the mentioned variations with those observed when carbachol was administered 30 min after ipratropium bromide, we can emphasize the following: no glottic closures were observed, there was a lesser increase of subglottic pressure (0.98 ± 0.36 cm H_2O), and total lung resistance was also lower (1.15 ± 0.43 cm H_2O/l/s, $P<0.05$). The correlation study between subglottic pressure and total lung resistance in both experimental groups as well as throughout the experiment, showed significant values ($P<0.001$), indicating that the increase in bronchial tone was always accompanied by an increase in larynx resistance. The association of these two effects in the present and previous studies (2-4) could suggest that glottis contraction was reflexly modified by bronchial tone.

Palabras clave: Laringe, Constricción bronquial, Carbacol, Ipratropio.

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