

## Isoprenaline Effect on Larynx Resistance in the Cat

It has been shown previously that larynx resistance modifications can be induced by mechanical stimulation of the upper respiratory airways epithelium and electrical stimulation of several cranial 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 (1-5).

The purpose of the experiments here reported was to study larynx resistance changes in cat evoked by isoprenaline.

Experiments were carried out in eight cats, using isolated glottis technique larynx resistance and airflow were measured as previously described (3, 5). Intrapleural and abdominal pressures were recorded through catheters inserted into the pleural and the peritoneal cavities. Total lung resistance was calculated by the transpulmonary pressure/respiratory airflow relation ( $X/Y$ ) recorded on an oscilloscope. Arterial blood pressure was measured by means of a catheter in the femoral artery. Five minutes after isoprenaline administration (0.1 mg/kg i.v.) recordings showed a remarkable decrease in: a) expiratory larynx resistance ( $2.5 \pm 0.38$  cm  $H_2O$ /l/s) ( $0.01 > P > 0.001$ ); b) inspiratory total lung resistance ( $5.43 \pm 0.32$  cm  $H_2O$ /l/s;  $0.01 > P > 0.001$ ); c) expiratory total lung resistance ( $7.35 \pm 0.72$  cm  $H_2O$ /l/s;  $0.01 > P > 0.001$ ); d) mean arterial blood pressure ( $70.83 \pm 14.63$  mm Hg;  $0.01 > P > 0.001$ ); e) abdominal pressure and inspiratory and expiratory pleural pressures. Otherwise there was an increase in

inspiratory ( $0.026 \pm 0.007$  l/s;  $0.01 > P > 0.001$ ) and expiratory airflow ( $0.025 \pm 0.005$  l/s;  $0.01 > P > 0.001$ ). No significant changes in respiratory and cardiac rate were recorded. During nine minutes following isoprenaline administration, mechanical stimulation of the

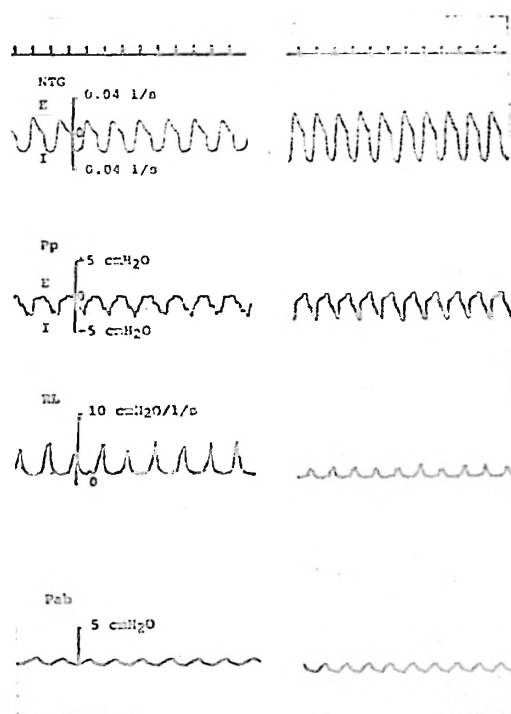


Fig. 1. Effect of isoprenaline. From the top the traces are: neumotacogram, pleural pressure, larynx resistance and abdominal pressure. Before (left-hand column) and after (right-hand column) isoprenaline administration. Note decrease in expiratory larynx resistance.

trachea and glottis epithelium did not induce cough response in all of the cats.

The main findings were the decreases of larynx resistance and total lung resistance. Although no detailed analysis of the mechanisms underlying these responses were made it is of interest to point that the bronchial dilatation has been always accompanied by a decrease of larynx resistance. The association of these two effects in the present and previous studies could suggest that glottis contraction was reflexly modified by bronchial tone.

### References

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