

TRACHEOBRONCHIAL EXPIRATION REFLEX: A NEW INSIGHT INTO AIRWAY DEFENSIVE REFLEXES

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The expiration reflex (ER) was defined as the strong expiratory effort not preceded by an inspiration, which can be only elicited by mechanical stimulation of the larynx or vocal folds (1). Cough reflex (CR) starts with an inspiration which is followed by strong expiration. It is clear that the ER differ from CR in many physiologic and pharmacologic ways. However, in some experimental and clinical studies was questioned the exclusive place for ER induction in the larynx. The aim of our study was to find out whether laryngeal mucosa is really exclusive place for induction of ER, and whether stimulation of tracheobronchial (TB) mucosa does not lead to ER, too. To find the answers to the question mentioned we reanalyzed our previous records with mechanical and chemical stimulation of mucosa in the tracheobronchial tree (TB) and in the larynx (LX) in cats and rabbits to see if an ER can consistently be elicited from both these places or from the larynx alone. The reanalyzed records came from experiments done on anesthetized and non-anesthetized cats, and on anesthetized rabbits of either sex. Respiratory reflexes were provoked by mechanical and chemical stimulation both laryngeal and tracheobronchial mucosa. In one group of anesthetized animals we inflated lungs by pressure 1.5 kPa to find out the effect of slowly adapting stretch receptor stimulation on the intensity of CR and ER. Details on the experimental methods used have been fully described elsewhere (2, 3). Our results showed that mechanical stimulation of TB mucosa frequently leads to ER or ER plus CR (in 11 to 39% stimulations), but ER was more frequent from LX than from TB. The occurrence of ER or ER plus CR was higher in the anesthetized than in non-anesthetized cats. Lung inflation increases the occurrence and strength of ER or ER plus CR in cats and rabbits compared with animals without lung inflation. The results obtained in our study support the view that ER can be elicited from TB tree, but not so frequently as it is with the stimulation of LX mucosa. This conclusion, if accepted, is important, because TB expiration reflex must be taken into account during laboratory and clinical research on defensive reflexes from the lower airways.

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The presentation was supported by Project of European Social Fond No. SOP LZ 2005/NP1-027, 11230100433.