

Effect of erythromycin on the motility of sphincter of Oddi in dog

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Abstract

AIM: The purpose of the present study was, first, to characterize the manometric pattern of the biliary tract (the sphincter of Oddi, SO) in dogs; Second, to evaluate the effect and mechanism of erythromycin (EM) on the motility of SO in dogs.

METHODS: Performance characteristics of the Low compliance pneumohydraulic-capillary infusion system were evaluated by two **METHODS:** (1) bench test, (2) biliary manometry in dogs. The results show that the appliance have high recording fidelity capable of studying on gut, such as esophagus, biliary tract.

RESULTS: The result show as follows: (1) Intravenous administration of EM (7 mg/kg/30 min) caused an excitatory action on the SO in dogs; Increasing the amplitude and duration of phasic contraction

(18.8 ± 1.02 mmHg vs 14.9 ± 0.87 mmHg, $P < 0.001$; 0.53 ± 0.06 s vs 0.34 ± 0.04 s, $P < 0.001$, respectively); Reducing the frequency of phasic contraction (6.1 ± 0.35 cpm vs 14.2 ± 0.81 cpm, $P < 0.001$); Having no effect on basal pressure of SO (11 ± 0.60 mmHg vs 11 ± 0.80 mmHg, $P < 0.05$). (2) EM administration caused a significant increase in plasma motilin concentration in dogs ($P < 0.01$). A positive correlation ($r = 0.8332$, $P < 0.05$) was found between the amplitude of phasic contraction and peak plasma levels of motilin induced by EM. (3) Atropine completely inhibited the effects of EM on the SO motility and motilin release ($P < 0.01$ by ANOVA). Atropine administration reduced the basal pressure of SO. (4) The effect of EM on motility of SO was abolished by verapamil or glyceryl trinitrate. They also reduced the basal pressure of SO.

CONCLUSION: The finding indicated that the actions of EM on dog SO may be mediated by activating motilin receptor, stimulating the cholinergic pathway and inducing the release of endogenous motilin. EM had excitatory effect on SO, but it had no action on basal pressure of SO and EM reduced the frequency of phasic contractions. All of this may be of benefit to the gallbladder emptying.

Key words: Erythromycin; The sphincter of Oddi

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