

CORRESPONDENCE

Readers are encouraged to write Letters to the Editor concerning articles that have been published in GASTROENTEROLOGY. Short, general comments are also considered, but use of the Correspondence Section for publication of original data in preliminary form is not encouraged. Letters should be typewritten double-spaced and submitted in triplicate.

Cholecystokinin-Induced Contractions in the Opossum Gallbladder

Dear Sir:

In a recent article in GASTROENTEROLOGY, Hanyu et al. showed evidence for the inhibition of cholecystokinin octapeptide (CCK-OP)-stimulated gallbladder contraction by atropine and hexamethonium in the opossum (1). Meal- and intraduodenal infusion-stimulated gallbladder contractions were similarly inhibited by these antagonists. However, pirenzepine, an M_1 -muscarinic receptor antagonist, and 4-DAMP, an M_1 and M_2 antagonist (designated as M_2 in this study), did not antagonize the action of CCK-OP on opossum gallbladder.

On the other hand, in a recent study we showed that contraction of gallbladder by continuous IV infusion of CCK-OP in physiological doses ($14 \text{ pmol} \cdot \text{kg}^{-1} \cdot \text{h}^{-1}$ or $20 \text{ ng} \cdot \text{kg}^{-1} \cdot \text{h}^{-1}$) for 60 minutes (2) was significantly inhibited by IV bolus injection of pirenzepine (0.14 mg/kg) in humans (3). The magnitude of this inhibition by pirenzepine was similar to that of atropine in the first 30 minutes. Therefore, M_1 -muscarinic receptors are likely to be involved in the inhibition of CCK-OP-induced gallbladder contraction by atropine. The different results obtained by us and Hanyu et al. might be caused by species differences, experimental design, or CCK-OP and pirenzepine doses. The CCK-OP dose used by Hanyu et al., $10 \text{ ng} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$ for 60 minutes, is 30 times higher than the dose we used. Pirenzepine is reported to be 20 times less potent than atropine on a wt/wt basis in rat perfused stomach to decrease bethanecol-induced gastric acid secretion (4). Hanyu et al. used pirenzepine only at 6.7 times higher doses than atropine. Higher doses may be required to antagonize CCK-induced gallbladder contraction in the opossum.

In addition, in discussing their results, the authors state that a muscarinic receptor subtype that is responsible for cholinergic contraction and not yet defined might exist in the opossum gallbladder. We have recently studied the muscarinic receptor subtypes of the guinea pig gallbladder smooth muscle strips functionally and found that the affinity of 4-DAMP for this type of smooth muscle is 20.4 times lower than that of ileum (pA_2 values are 8.1 and 9.4, respectively) (5). Therefore, we concluded that gallbladder smooth muscle cell muscarinic receptors are distinguishable from those of other gastrointestinal smooth muscles and might represent a muscarinic receptor subtype other than the well-defined M_1 , M_2 , and M_3 muscarinic receptors.

Last, we would like to comment on the statement, "Existing findings in the literature indicate that in the gallbladder of different species, CCK may act at neural sites," for which the authors refer to Yau and Youter (6). In this particular study by Yau and Youter, there is no evidence for CCK's action on neural sites to stimulate gallbladder smooth muscle. Instead, in this *in vitro* study, transmural field stimulation caused acetylcholine release in [^3H]acetylcholine-loaded gallbladder strips whereas CCK-OP did not. There-

fore, Yau and Youter stated that gallbladder neurones are insensitive to a stimulation by CCK-OP (6).

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3. Yegen BC, Tankurt E, Gürmen N, Bayram M, Oktay S, Ulusoy NB. Inhibition of cholecystokinin-induced gallbladder contraction by atropine and pirenzepine in man. *Digestion* 1990;45:176-180.
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Intragastric Balloons in Obesity

Dear Sir:

Mathis-Vliegen et al. (1) report their experience with the Ballobes gastric bubble in the treatment of morbid obesity. I believe they may have missed an important point in the reporting of their results.

I doubt that any gastric bezoar will perform better than a motivated patient on a prudent low-calorie diet. A controlled study showing a gastric balloon to be as efficacious as a diet implies a benefit of the balloon similar to that of the diet. It does not imply that the balloon is ineffective. In the management of obesity, obtaining initial weight loss in properly motivated patients is of value. It is not as difficult as maintaining the motivation and the weight loss over time. It is in the area of chronic (months to years) therapy that balloon therapy may provide a breakthrough. It is this area that should be studied. This area cannot be studied without