

论述

# 胃电刺激对大鼠VMH胃扩张敏感神经元电活动及脑内催产素表达的影响

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收稿日期 2005-7-15 修回日期 2005-10-19 网络版发布日期 2008-8-3 接受日期 2005-10-19

**摘要** 目的: 给予胃窦部以2组不同参数的电刺激, 观察大鼠下丘脑腹内侧核 (VMH) 胃扩张 (GD) 敏感性神经元放电频率的变化及脑内有促进摄食作用的神经肽-催产素(OT) 表达的变化, 为胃电刺激 (GES) 治疗肥胖的中枢作用机制及临床上治疗肥胖参数的选择提供理论依据。

**方法:** ① 电生理实验: 采用细胞外记录神经元单位放电方法, 记录下丘脑腹内侧核神经元自发放电活动, 根据神经元对胃扩张刺激反应的不同, 分为胃扩张兴奋性神经元 (GD-E) 和胃扩张抑制性神经元 (GD-I), 并观察不同参数电刺激胃窦部, VMH内GD-E和GD-I放电频率的变化。②免疫组化实验: 采用免疫荧光组织化学染色方法观察胃电刺激 2 h 对大鼠脑内OT阳性神经元表达的影响。

**结果:** ① 电生理结果: GES1和GES2分别使60.4%和75.0%的GD敏感性神经元兴奋 (P>0.05)。GES2和GES1分别可使GD-E神经元的放电频率平均增加343.59%±89.19%和97.44±33.67% (P<0.05), GD-I神经元的放电频率平均增加366.30%±87.20%和112.00%±14.67% (P<0.05)。②免疫组化结果: GES1刺激胃窦部 2 h, 室旁核 (PVN) 和视上核 (SON) OT 免疫阳性神经元明显增加 (P<0.05)。

**结论:** GES可通过兴奋“饱中枢”-VMH内胃扩张敏感性神经元和增加脑内OT的表达来抑制摄食, 且GES的作用效应与其强度有关。

**关键词** [胃电刺激](#); [下丘脑腹内侧核](#); [催产素](#); [大鼠](#)

分类号 [R73](#)

## Effects of gastric electrical stimulation on the activity of gastric distension sensitive neuron in VMH and the expression of oxytocin in rat brain

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### Abstract

<FONT face=Verdana>AIM: To study the central mechanism of gastric electrical stimulation (GES) in treating obesity in rats by observing the effects of GES on gastric distension (GD) sensitive neurons in ventromedia hypothalamus (VMH) and the expression of oxytocin (OT) in brain. <BR>METHODS: The effects of GES on GD sensitive neurons in VMH were observed by recording extracellular potentials of single neurons. GD sensitive neurons were classified as GD-E neurons and GD-I neurons according to the response to GD. GES with two sets (GES1 and GES2) of parameters was applied for one minute. On the other hand, the expression of oxytocin in PVN and SON was observed by fluo-immunohistochemistry staining using GES1. <BR>RESULTS: (1) 60.4% and 75.0% GD sensitive neurons were excited by GES1 and GES2, respectively (P>0.05). The firing varied rate of GD-E neurons to GES2 was significantly greater than that to GES1 (343.59%±89.19% vs 97.44%±33.67%, P<0.05), the same results in GD-I neurons (366.30%±87.20% vs 112.00%±14.67%, P<0.05) was also observed. (2) The expressions of OT immunoreactive (OT-IR) positive neurons were significantly increased in PVN (P<0.01) and SON (P<0.05) using GES1 for 2 h. <BR>CONCLUSION: These results indicate that GES may inhibit feeding by exciting the activity of GD sensitive neurons in VMH and increase the expression of OT in brain. The excitatory effect of GES is related to the strength of stimulation. </FONT>

**Key words** [Gastric electrical stimulation](#) [Ventromedial hypothalamic nucleus](#) [Oxytocin](#) [Rats](#)

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