

论著

A型肉毒毒素降低大鼠胃平滑肌收缩及P物质含量

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摘要 目的: 在胃窦前壁注射A型肉毒毒素(BTX-A)后观察局部P物质(substance P)含量和分布的变化及其胃平滑肌收缩的变化, 揭示两者之间的关系。方法: 健康Wistar大鼠30只(普通级), 体重260-300 g, 雌雄不限。随机分为BTX-A组(B group)及对照组(A group), 在胃体前壁与幽门部交界线中点平滑肌内分别注射0.3 mL BTX-A (20 U/kg), 或0.9% 氯化钠溶液0.3 mL; 记录胃肌电24 min后, 切取局部胃前壁组织行放射免疫测定和免疫组化。结果: ①放射免疫检测结果提示胃前壁组织中BTX-A组SP平均含量较对照组低28% (P<0.01), 免疫组化结果显示BTX-A组SP免疫反应阳性产物含量较对照组低11% (P<0.05); ②注射BTX-A 12 min, 24 min后, BTX-A组胃肌电的各项指标除24 min后峰电位发生率无显著差异(P>0.05)外, 其它均低于对照组(P<0.05)。结论: BTX-A可以减少局部SP的含量, 这种减少导致了胃肠平滑肌收缩功能的抑制。

关键词 [肉毒毒素类](#); [P物质](#); [胃](#); [肌,平滑](#)

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Botulinum toxin type A inhibits the contraction of stomachic smooth muscles and decreases the content of substance P in rats

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Abstract

AIM: The present study investigated whether the spontaneous contraction of stomachic smooth muscle was inhibited by injection of botulinum toxin type A (BTX-A) into the anterior wall of gastric antrum, whether local substance P (SP) content was altered in the wall of gastric antrum. METHODS: 30 rats were randomly divided into botulinum toxin type A (BTX-A, B group) and control group (A group). Parenteral solution of BTX-A (20 U/kg in 0.3 mL) or 0.9% sodium chloride was injected into the gastric antrum. The gastrointestinal myoelectric activities were recorded by Biolap system at the same time. The rats were sacrificed at the end of recording. The changes of SP were observed with SABC immunohistochemical method or detected with radioimmunoassay in the injection site of stomach. All the data were statistically analyzed by paired t test or student's t test. RESULTS: ① 28% SP contents in BTX-A treatment group decreased, compared with control group, at the 24th min (radioimmunoassay method, P<0.01). Substance P immunoreactive fibers in the stomachic pyloric part showed a remarked decrease after BTX-A application. The densities and numbers of SP-IR fibers were decreased in the gastric antrum (P<0.05). ② According to statistical analysis, frequency, amplitude, peak area of slow or fast wave were evidently decreased in the BTX-A treatment group at the 12th min and 24th min (P<0.05 or P<0.01). CONCLUSIONS: ① The initial pilot study suggests that BTX-A injection at the anterior wall of stomach leads to reduction in contents of SP significantly. ② Frequency, amplitude, and peak area of slow and fast wave are inhibited by BTX-A.

Key words [Botulinum toxins](#) [Substance P](#) [Stomach](#) [Muscle, smooth](#)

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