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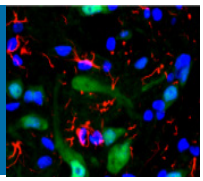

The expression change of SNAP-25, CGRP, GluA1 in injured skin and muscle after plantar incision in rats

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[Abstract] Background/Purpose: The study was aimed to investigate the gene expression of SNAP-25, CGRP and GluA1 in skin and muscle around the injury site, and explore the relationship between these genes and postoperative acute pain. **Methods:** 56 healthy adult male SD rats were randomly divided into sham group and plantar incision group. The mechanical withdrawal threshold of rats was assessed at 2 h, 6 h, 12h, 1 d, 3 d and 5 d after injury, the morphology changes of the injured skin and muscle were observed by HE staining, the gene expression of SNAP-25, CGRP and GluA1 was detected by Western blot and Q-PCR at 6 h in skin and muscle around the injury site after surgery. **Results:** The mechanical withdrawal threshold assessment showed that the mechanical withdrawal thresholds of rats were significantly less than that in sham group within 5 day post-injury; HE staining showed that inflammatory cell infiltration increased significantly in skin and muscle, local tissue was destroyed; Q-PCR and Western blot results showed the expression of SNAP-25, CGRP, GluA1 increased obviously in skin; in injured muscle, the mRNA expression change the same with the skin, but WB results showed the protein expression of SNAP-25, CGRP decreased obviously, the GluA1 increased obviously. **Conclusion:** The effect of SNAP- 25 on postoperative acute pain may be mediated by the release of the two neurotransmitters CGRP and GluA1, which provides a new idea for postoperative acute pain molecule combination therapy.

[Key words]: Postoperative Acute Pain; Plantar Incision; SNAP-25; CGRP; GluA1

大鼠足底切口后损伤皮肤和肌肉 SNAP-25、CGRP、GluA1 的表达变化

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[摘要]：背景/目的：研究 SNAP-25、CGRP 和 GluA1 在损伤部位周围皮肤和肌肉中的基因表达，探讨这些基因与术后急性疼痛的关系。**方法：**将 56 只健康成年雄性 SD 大鼠随机分为假手术组和足底切开组。分别于伤后 2 h、6h、12h、1d、3d 和 5d 测定大鼠的机械戒断阈值，HE 染色观察损伤皮肤和肌肉的形态学变化，术后 6 h 用 Western blot 和 Q-PCR 检测损伤部位周围皮肤和肌肉 SNAP-25、CGRP 和 GluA1 的基因表达。**结果：**机械戒断阈值评估显示，伤后 5 天内大鼠机械戒断阈值明显低于假手术组；HE 染色显示皮肤和肌肉炎症细胞浸润明显增加，局部组织被破坏；定量聚合酶链反应和蛋白质印迹结果显示皮肤中 SNAP-25、CGRP、GluA1 的表达明显增加；损伤肌肉的 mRNA 表达变化与皮肤相同，但 WB 结果显示 SNAP-25、CGRP 蛋白表达明显下降，GluA1 明显升高。**结论：**SNAP-25 对术后急性疼痛的作用可能是通过释放两种神经递质 CGRP 和 GluA1 介导的，为术后急性疼痛分子联合治疗提供了新思路。

关键词：术后急性疼痛；足底切口；SNAP-25；CGRP；GluA1