

عنوان مقاله:

Effects of buprenorphine in the adrenal, thyroid, and cytokine intra-operative responses in a rat model (*Rattus norvegicus*): a preliminary study

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خلاصه مقاله:

Objective(s): Buprenorphine is a common analgesic in experimental research, due to effectiveness and having few side-effects, including a limited influence in the immune and endocrine systems. However, how buprenorphine affects cytokine levels and the adrenal and thyroid response during general anesthesia and surgery is incompletely understood. This study aimed to assess whether buprenorphine modulated significantly those responses in rats submitted to general anesthesia, mechanical ventilation, and surgical insertion of intravascular catheters. **Materials and Methods:** Animals were anesthetized with isoflurane, mechanically ventilated, and surgically instrumented for carotid artery and the femoral vein catheter placement. The test group (n=16), received buprenorphine subcutaneously before surgery, whereas the control group (n=16) received normal saline. Blood sampling to determine plasma levels of adrenocorticotrophic hormone (ACTH), corticosterone (CS), total thyroxine (TT4), total triiodothyronine (TT3), thyroid-stimulating hormone (TSH), TNF- α , IL6, IL10, TNF- α , IL6, and IL10 mRNA was performed at 10 min after completion of all surgical procedures and at 90, 150, 240, and 300 min thereafter, with the animals still anesthetized and with

mechanical ventilation. Results: Buprenorphine-treated animals had higher levels of ACTH, CS, and TTF at several time points ($P < 0.05$) and TSH and TTR at all-time points ($P < 0.05$). They also had increased IL1 β , TNF- α , and IL1 α mRNA levels. Conclusion: In this model, buprenorphine significantly modulated the intra-operative cytokine and endocrine response to anesthesia, mechanical ventilation, and surgical placement of intravascular catheters. The mechanism and significance of these findings remain undetermined. Researchers should be aware of these effects when considering the use of buprenorphine for analgesic purposes.

کلمات کلیدی:

ACTH, Buprenorphine, Corticosterone, Cytokine, Intra- surgery, Rat

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