THE EFFECTS OF INTRATHECAL METHYLENE BLUE AND GLYCERYL TRINITRATE ADMINISTRATION ON OROFACIAL PAIN IN MICE

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Purpose: Nitric oxide (NO) is involved in several types of pain processes. In patients with migraine, glyceryl trinitrate, a pro-drug for NO, produces a delayed migraine episode. In this study, we decided to evaluate the effects of intrathecal administration of a NO pro-drug (glyceryl trinitrate-GTN) and a NO scavenger (methylene blue–MB) on orofacial pain (OFP).

Methods: 24 BALB/c mice were divided in 3 groups as follows: GTN group (0.1mg/kg, n=8), MB group (0.05mg/kg, n=8) and control group (NaCl, n=8). All groups received the substances intrathecally. Two hours after drug/saline administration, formalin was injected into the upper lip and the time mice spent rubbing/liking the injected area was recorded. The results for each phase are presented in seconds. ANOVA and Dunnett post-hoc test were used for statistical evaluation.

Results: Intrathecal administration of MB and NTG had no effect on the acute phase of OFP when compared with control. In the second phase, however, both drugs had an analgesic tendency; for GTN, this was statistically significant ($p=0.025$), and for MB the effect was less important ($p=0.083$).

Conclusions: By centrally administering a NO pro-drug and a NO scavenger, we expected to modulate NO production in formalin-induced OFP. Our results demonstrated that the acute phase of OFP does not depend on NO (neither of the drugs had any effect) and that both substances diminish pain perception in the persistent/inflammatory phase but only the NO pro-drug had a clear-cut antinociceptive effect.