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Post-injection sciatic neuropathy: Effects of intramuscular and intraneural administration of thiocolchicoside in mice

Alizade A¹ & Terzi MY^{2,3*}

¹Department of Pharmacology, Faculty of Medicine, Van Yüzüncü Yıl University, Van, Türkiye

²Department of Medical Biology, Faculty of Medicine, ³Department of Molecular Biochemistry and Genetics, Graduate School of Health Sciences, Hatay Mustafa Kemal University, Hatay, Türkiye

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We aimed to investigate whether neuropathic pain post-gluteal injections in mice occurs due to sciatic nerve damage by injector or neurotoxicity of thiocolchicoside (Thio) itself. Acute pain till 48 h post-gluteal injection was analyzed with rot-rod, tail-flick, cold-plate, Von-Frey, and paw-grip-endurance tests in no-injection-received control group and intramuscular (IM) and intraneural (IN) Thio or vehicle injection-received mice. Histopathological examination was performed with hematoxylin-eosin staining. Behavioral tests showed that nociceptive parameters and motor functions of mice in IN-injected groups were significantly lower than in IM-injected ones and control group. Behavioral tests performed post-24-h showed no significant difference between control and IM-injected groups. However, IN-injected groups showed marked and consistent differences until 48-h compared to control. The difference between IM-vehicle and IM-Thio groups at early time points revealed partial, temporary neurotoxic effect of Thio. The histopathologic analyses measured degeneration severity and revealed that IN-Thio injections caused the most severe degeneration which aligned with the behavioral tests. We observed mild, temporary pathologic effect of Thio by diffusion on sciatic nerve. IN-injections caused insistent and severe sciatic nerve damage due to mechanical impact. Our results suggest that the prevention of injection-triggered neuropathy requires appropriate injection methods/agents performed by experienced medical personnel.

Keywords: Injection neuropathy, Sciatic nerve injury, Thiocolchicoside, Mouse model