The Effect of Granisetron on Bupivacaine Induced Sciatic Nerve Block in Rats

Presenting Author: Mehmet Sari, MD[1]

Co -Authors: Fatma Nur Erdogdu, MD[1], Ali Ozgul Saltali, MD[2], Mehmet Sarı, MD[1], Ibrahim Ozkan Onal, MD[1], Jale Bengi Celik, MD[1], Seza Apiliogullari, MD[1]

[1]Department of Anesthesiology, Selcuk University Faculty of Medicine, Konya, Turkey.

[2]Kadinhani Refik Saime Koyuncu State Hospital, Konya, Turkey.

Aim: The effects of the 5-HT_3 receptor antagonists on regional anesthesia are complex and unclear. Saltali et al.(1) show that 800mcg perineural ondansetron decrease the bupivacaine induced motor, sensory and proprioceptive function in the rats sciatic nerve. The primary aim of this study was to determine the effect of perineural granisetron on bupivacaine induced motor block in the rats sciatic nerve.

Methods: The study was approved by Selcuk University Committee for the Use and Care of Animals. Thirty-eight male Wistar Albino rats which received unilateral sciatic nerve blocks were randomly divided into five experimental groups: Group B (control,n=6) received a perineural of 0.3ml of bupivacaine alone; Group BG_{800} (n=8) received perineural 0.3ml of bupivacaine and 800µg of granisetron 10min later; Group BG_{1200} (n=8) received perineural 0.3ml of bupivacaine and 1200µg of granisetron 10min later; Group BG_{1200IP} (n=8) received a perineural 0.3ml of bupivacaine and an intraperitoneal injection of 1200µg of granisetron 10min later; and Group S (n=8) was sham operated. A blinded investigator assessed motor, sensory and proprioceptive function every 10min until the return of normal function.

Results: The time to the return of normal motor, sensory and proprioceptive function was not statistically significantly different between the groups (Table 1). The median time to the return of normal motor function in the Group B, Group BG_{800}, Group BG_{1200}, and Group BG_{1200IP} was 105min, 64min, 85min and 120 min respectively. Motor block did not develop in any of the rats in Group S.

Conclusion: Although local application of perineural 800 µg granisetron causes 39% decrease in the duration of motor block, granisetron did not statistically significantly decrease the duration of bupivacaine induced motor sensory and proprioceptive block in the rats sciatic nerve.

Table 1. The median times to the return of normal motor, sensory and proprioceptive function.

The median times to the return of normal motor, sensory, proprioceptive function (minute)			
Groups	**Motor Function (median, min-max)**	**Sensory Function (median, min-max)**	**Proprioceptive Function (median, min-max)**
Group B	105	80 (30-237)	80 (30-237)

	(30-237)		
Group BG_{800}	64 (43-112)	64 (43-112)	63 (33-105)
Group BG_{1200}	85 (49-124)	84 (54-120)	85 (42-120)
Group G_{1200IP}	120 (77-150)	104 (77-140)	108 (23-140)

Group B: Only bupivacaine group, Group BG_{800}: Bupivacaine + perinöral 800 µg granisetron, Group BG_{1200}: Bupivacaine + perinöral 1200 µg granisetron, Group BG_{1200IP}: Bupivacaine + intraperitoneal 1200 µg granisetron

References:

1. Saltali at al. The reversal effect of ondansetron bupivacaine induced sciatic nerve block in rats. Oral presentation, 7th European Congress of Pharmacology, Istanbul, Turkey.