

Title: SYMPATHETIC BLOCK DOES NOT IMPROVE TACTILE SENSITIVITY IN PATIENTS WITH REFLEX SYMPATHETIC DYSTROPHY

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**Introduction.** In a previous investigation we showed that chronic pain patients, when compared to pain-free individuals exhibited a decrease in tactile sensitivity as tested by two-point discrimination thresholds<sup>1</sup>. An investigation by Lindblom and Meyerson<sup>2</sup> demonstrated a decrease in tactile sensitivity following pain relief mediated by dorsal column stimulation. They tested tactile sensitivity on pain-free skin areas of the foot using half-cycle sinusoidal mechanical pulses applied through a 2 mm diameter blunt probe. We questioned whether pain relief in patients with reflex sympathetic dystrophy (RSD) would affect their tactile sensitivity as tested through two-point discrimination thresholds. Furthermore, we felt it important to test both painful and non-painful limbs. The non-blocked side could serve as a control.

**Methods.** There were 19 consenting individuals who participated in this IRB approved investigation. Of these, 14 received stellate ganglion blocks for upper extremity RSD pain while 5 received lumbar sympathetic blocks for lower extremity RSD pain. Two-point thresholds were determined in the blind-folded individuals using a calibrated Lafayette Instrument aesthesiometer with a single individual performing all the testing. The painful and the corresponding non-painful extremity was tested in identical procedures. The area of the arms used for testing was the medial aspect of the palmar surface of the wrist. Lower extremities were tested posterior to the medial malleolus. The Method of Limits was used to assess thresholds. Each session consisted of a series of two ascending and two descending trials in 2 mm increments. These were administered in alternating orders. Approximately 30 min following successful stellate ganglion and lumbar sympathetic block with 0.25% bupivacaine the threshold testing was repeated. Statistical significance was evaluated using separate repeated measures ANOVA on the stellate and lumbar groups.

**Results.** The stellate ganglion group consisted of 8 females and 6 males while the lumbar sympathetic group consisted of 4 females and 1 male. None had allodynia. Table 1 indicates mean age  $\pm$  SD of the RSD patients. Table 2 shows the mean thresholds and SD pre- and post-block patients. There was no significant differences between the painful and the non-painful limbs pre- and post-block, nor was there any significant change in tactile sensitivity in either limb following pain relief.

Table 1. Mean (SD) Age

	N	Stellate Block	N	Lumbar Block
Female	8	25.1 $\pm$ 9.5 yrs	4	46 $\pm$ 13.9 yrs
Male	6	37.2 $\pm$ 10 yrs	1	10 $\pm$ 0 yrs

Table 2. Mean (SD) Thresholds

Pre- and Post-Stellate Ganglion Block Thresholds			
Pain Arm		Non-Painful Arm	
Pre-Block	Post-Block	Pre-Block	Post-Block
46.49(15.38)mm	46.94(11.79)mm	44.78(12.19)mm	48.12(12.6)mm
Pre- and Post-Lumbar Sympathetic Ganglion Block Thresholds			
Pain Leg		Non-Painful Leg	
Pre-Block	Post-Block	Pre-Block	Post-Block
41.4 (18.41)mm	47.0 (14.76)mm	38.55(12.27)mm	44.4 (9.98)mm

**Discussion.** Our results revealed that in RSD patients there was no difference in tactile sensitivity between limbs as determined by two-point discrimination thresholds. Sympathetic blockade did not seem to alter the ability of RSD patients to discriminate between two points. Furthermore, sympathetic blockades which produced pain relief did not change the tactile sensitivity. A recent study by Kissin et al<sup>3</sup> reported that sympathetic blockade increased tactile sensitivity in chronic pain patients. Their patients improved in their ability to respond to touch or no-touch stimulus which was presented at various pressures. They tested the painful limbs but chose a pain-free skin area. None of their patients had typical symptoms of RSD. Their method differed from ours in that they used a modified von Frey method of single filament application. It also may point towards difficulties in response criteria versus discriminatory ability in the patients. Lindblom and Meyerson's<sup>2</sup> method and area tested also differed from ours. These differences in methodology may explain the conflicting results of these studies. The lack of improvement in tactile sensitivity immediately following sympathetic block does not rule out potential for improvement over longer pain-free periods.

#### References.

1. Seltzer SF, Seltzer JL: Tactile sensitivity of chronic pain patients to non-painful stimuli. Pain 27:291-295, 1986.
2. Lindblom U, Meyerson BA: Influence on touch, vibration and cutaneous pain of dorsal column stimulation. Pain 1:257-270, 1975.
3. Kissin I, McDanal J, Brown PT, Xavier AW, Bradley EL: Sympathetic block increases tactile sensitivity. Anesth Analg 66:1251-1255, 1987.