Title: DOES THE SYMPATHETIC BLOCK OUTLAST SENSORY BLOCK--A THERMOGRAPHIC EVALUATION

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Introduction. Controversy exists regarding the relative duration of sensory block in comparison to sympathetic block in Epidural blockade. When doing retrograde differential epidural blocks, it is assumed that the sympathetic block outlasts the sensory block. However, some studies indicate that the sympathetic block resolves when the sensory level falls below T-9 or T-10.[2] The present study was undertaken to evaluate the duration of the sympathetic and sensory block in the L_2 and L_5 dermatome distributions using thermography to evaluate sympathetic function and pinprick to evaluate sensory function.

Methods. One female and nineteen male patients between the ages of 27 and 75 years undergoing epidural block were included in the study. An epidural catheter was advanced 3 cm into the epidural space through a needle placed at the L_{3-4} interspace. After baseline sensory and thermographic evaluation, 10 to 15 ml of 2% Lidocaine with 1:200,000 Epinephrine was injected through the catheter with the patient in supine position. Sensation to pinprick and thermographic evaluations were done before the injection of local anesthetic and every 15 minutes after the injection until both returned to baseline levels. The polaroid thermography pictures were evaluated by a reviewer blinded to the patient's sensory status, and the sympathetic block was considered to be present when the temperature rose 2^{o} C above baseline and recovered at the time it had returned to within 2^{o} C of baseline. Onset and duration of the sensory and sympathetic blocks were determined and compared using ANOVA for repeated measures with sympathetic and sensory as one repeated measures factor and left and right leg being the other repeated measures factor. The relative duration of the sympathetic and somatic blocks was also individually assessed in each extremity in the L_2 and L_5 dermatomes, and this was compared using a Chi Square Test. A "P" value of less than .05 was considered statistically significant.

Results. There was no statistical difference between the duration of sensory and sympathetic block over the anterior thigh in the L_2 dermatome distribution (Table I). However, the duration of the sympathetic block was significantly longer than the sensory block in the L_5 dermatome distribution. In the majority of extremities, sympathetic block outlasted sensory in the L_5 dermatome although in certain cases, duration was shorter (Table II). In the L_2 dermatome, however, the sympathetic block outlasted the sensory in approximately 50% of the extremities.

Discussion. The longer duration of the sympathetic block may be related to the differential sensitivity to local anesthetics of the preganglionic sympathetic fibers compared to the somatic A delta and C fibers. The variability in the duration of the sympathetic block may be related to some degree to escape of the solution through the intervertebral foramina and subsequent blocking of the paravertebral ganglia or the post ganglionic C fibers in the nerve root. Even though the sympathetic block outlasts the sensory block in a majority of the extremities during the epidural block, it is interesting to note that consideration of individual patients reveals that the sensory block may outlast the sympathetic block in some instances. This fact is extremely important while using the differential epidural in the diagnosis of pain syndromes. Even in the same patient, the relative duration of sensory and sympathetic blocks could be different between extremities. Thus, one cannot assume that the sympathetic block will always last longer than the sensory block, and the sensory and sympathetic blocks should be carefully assessed before arriving at any conclusions.

The sympathetic block generally outlasts the sensory block; but it is important to monitor the sympathetic function along with the sensory block in individual patients to determine the exact course of events. Generalized assumptions are likely to lead to false conclusions in differential epidural blocks.

TABLE I
MEAN DURATION IN MINUTES ± STANDARD DEVIATION

	SENSORY	SYMPATHETIC	P VALUE
L_2 Dermatome	134.58 ±27.19	138.54 ± 42.34	.7972
L_5 Dermatome	114.75 ±41.54	143.25 ±33.44	.0069

TABLE II
DURATION SYMPATHETIC BLOCK
COMPARED TO SENSORY BLOCK

	Shorter	Equal	Longer
L_2 Dermatome	17	0	19
L_5 Dermatome	7	7	26

Chi - Square Probability .002

References.

1. Raj PP, Ramamurthy, S: "Differential Nerve Block Studies," Practical Management of Pain, ed. Prithvi Raj. Chicago, YBMP, 1986.
2. Kim JM, LaSalle, AD, and Parmley, RT: Sympathetic recovery following lumbar epidural and spinal analgesia. Anesth. Analg. 56:352-355, 1977.