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Does the sympathetic block outlast sensory block: a thermographic evaluation *

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Summary A study to evaluate the duration of sympathetic and sensory block in the L₂ and L₅ dermatome distributions using thermography and pinprick was conducted. Twenty patients received epidural block using 2% lidocaine with epinephrine. Onset and duration of the sensory and sympathetic blocks were determined and compared statistically. There was no difference between the duration of sensory and sympathetic block over the L₂ dermatome, but sympathetic block was significantly longer than sensory block in the L₅ dermatome. This study demonstrates that the duration of sympathetic block can be either longer or shorter than sensory block in L₂ and L₅ dermatomes. This has important implications for interpretation of results of differential epidural studies in that one cannot predict the duration of sympathetic block based on duration of sensory block.

Key words: Anesthetic techniques; Regional, sympathetic block; Sympathetic dystrophy

Introduction

Controversy exists regarding the relative duration of sensory block in comparison to sympathetic block in epidural blockade [3,8,12,17,20]. Differential epidural blocks are frequently used in the pain clinic setting to distinguish the etiology of pain, i.e., sympathetic versus sensory or central mediation [1,2,19,25]. Results of differential epidural blocks are based on the assumption that sympathetic nerves are blocked with lower concentrations of local anesthetics than sensory and motor nerves. When doing differential epidural blocks, it is assumed that the sympathetic block outlasts the sensory block [6,13]. However, some studies indicate that the sympathetic block resolves when the sensory level falls below T₉ or T₁₀ [15]. Another study even

suggests that sympathetic B fibers are more difficult to block than A fibers [4]. Most studies involving duration of block of the different nerve fibers are either in vitro studies or on animal models. The present study was undertaken to evaluate the duration of the sympathetic and sensory block in a clinical setting. In this study we used thermography to evaluate sympathetic function and pinprick to evaluate sensory function in the L₂ and L₅ dermatome distribution.

Methods

After obtaining written informed consent and approval from the institutional review board, 1 female and 19 male patients aged 27-75 who were being treated in the Pain Clinic for chronic low back pain underwent differential epidurals. All procedures were done in a treatment room in a controlled environment as recommended by the manufacturer for accurate thermography results. Thermography was done using the Flexi-Therm Liquid Crystal Detectors^C in the L₂ distribution (anterior thigh) and in the L₅ distribution (dorsal foot). A single thermography plate was placed over bilateral anterior thighs (L₂) and then another was placed over the dorsum of both feet (L₅). This

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