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Anesthesiologists perception of injection pressures during nerve blockade

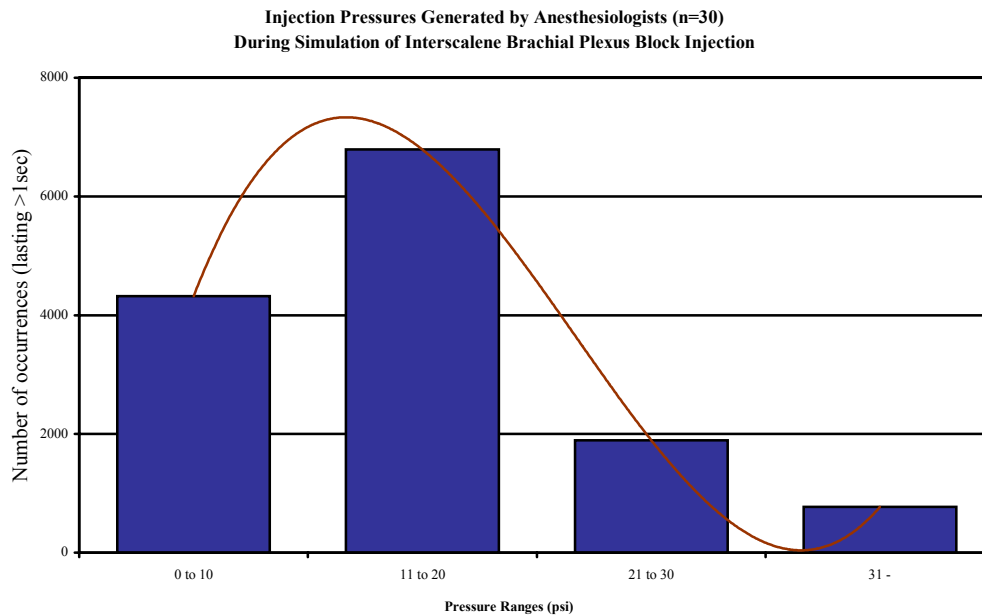
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Introduction: High injection pressure, during initiation of a nerve block, may portend intraneural injection. Many anesthesiologists rely on a subjective evaluation of resistance to injection ("feel") in order to alert them to the potential for intraneural injection. However, this is highly subjective and may be influenced by needle design. The purpose of this study was to identify how accurately individual anesthesiologists' could predict an abnormal injection resistance.

Methods: Thirty anesthesiologists, from separate practices, and having diverse experience with peripheral nerve blocks were evaluated. All were presented with a scenario in which they were asked to inject local anesthetic for another anesthesiologist performing of a simulated interscalene block on a manikin. The injections were made through a 50mm 22g needle (Stimuplex, BBraun, Inc) using two 20ml syringes. The pressure during injection, as well as the time required to complete the injection, were measured. The pressure data were acquired using a manometer (PG5000, PSI-Tronics Technologies Inc., Tulare, CA) to a computer via an analog digital conversion board (DAQ 6023, National Instruments, Austin, TX) and analyzed using data analysis software package (version BioBench 1.2, National Instruments, Austin, TX).

Results: Twenty-one (70%) anesthesiologists exerted pressures in excess of 20 psi, 15 (50%) in excess of 25 psi and 8% used pressures greater than 30 psi to inject local anesthetic. The time required to inject 40 ml of local anesthetic varied from 87 to 250 secs. The number of times the pressure exceeded 20 and 30 psi for at least 1 sec during an injection of 40 ml of local anesthetic is shown in Figure 1.



Discussion: Our data indicate that the perception of what is high resistance to flow and appropriate speed of injection vary widely among anesthesiologists. A significant number of pressures recorded were in excess of values that could portend an intraneural injection (>30 psi).

References:

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