

## PE-61. DOES INCREASED IMPULSE TIME FACILITATE PERIPHERAL NERVE BLOCKS IN DIABETIC PATIENTS WITH PERIPHERAL POLYNEUROPATHY?

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In patients with diabetes mellitus disease, end stage renal disease or a history of chemotherapy it is sometimes difficult to perform a peripheral nerve block by using a nerve stimulator because the muscle twitches necessary to locate the nerve can not be induced as needed. Peripheral polyneuropathy is a relatively common complication of diabetes mellitus, primarily affecting the distal parts of the extremities. The clinical symptoms usually include sensory disorders (paresthesias, hypesthesia), and less commonly, motor disorders (muscle weakness). These disorders may be the reason for the encountered nerve stimulation difficulties and may induce a less successful peripheral block. Three components are important to induce muscles twitches by stimulating a nerve, the intensity (measured in milliampere), the impulse time, (measured in milliseconds), and the frequency indicated in Hertz. Most of the nerve stimulators have a predefined fixed set up concerning the impulse time (0.1ms), while the current intensity and frequency can be respectively changed from 0.1mA to 5.0mA and 1 to 2 Hz.

**Method:** Using a nerve stimulator allowing to increase the impulse time of the current up to 1 ms (HSN 11, B-Braun, ) we performed sciatic nerve blocks on 13 diabetic patients for below knee amputation. To stimulate the sciatic nerve using a lateral approach, we initially set up the nerve stimulator at 1.5mA, 0.1ms and 2 Hz. After 3 attempts, the pulse duration was increase to 0.3 ms and next to 1 ms. Following a sciatic mediated motor response the position of the needle was adjusted to maintain the same response with a current <0.5 mA, prior to injecting the local anesthetic solution.

**Results:** In 5 patient it was possible to induce a sciatic mediated motor response, but the sciatic motor response could not be maintained with currents <0.5mA. In these patients muscle twitches were lost between 1.1 and 0.9mA. In these 5 patients it was possible to decrease le current to 0.5mA by increasing the impulse time to 1.0ms. In the remaining 8 patients, it was not possible to locate the nerve with the initial set up. An appropriate motor response was obtained after increasing the impulse time to 0.3ms or 1.0ms.

**Discussion:** The use of longer than 0.1 ms impulse duration has been previously advocated to stimulate sensory nerve such as the radial nerve at the wrist and the femoral cutaneous nerve.<sup>1</sup> To the authorís knowledge the importance of increasing the impulse time to obtain appropriate peripheral nerve mediated response has not been yet investigated in diabetic patient. These preliminary data show that the impulse time may be an interesting factor to study and may increase the success rate of peripheral nerve blocks in patients with peripheral polyneuropathy.

*1. McLeod D.H., Wong D.H.W., Vaghadia H., Claridge R.J., Merrick P.M.: Lateral popliteal sciatic nerve block compared with ankle block for analgesia following foot surgery. Can J Anaesth.42:759-765,1995*