

Case Report

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Ultrasound Guided Tibial Nerve Block to Distinguish the Spasticity and the Contracture

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It is sometimes quite difficult to distinguish between severe spasticity and contracture formation. To decide on an appropriate anti-spastic treatment and determine realistic expectations, in some cases, this distinction is very important.

A 16-year old boy with mild traumatic brain injury had a very severe limitation of movements of his toes flexors. The toes were in flexor posture with very limited Passive Range of Motion (PROM). The patient was suffering from foot pain while walking. A callus formation could be seen under the foot. (Figure 1) During the physical examination, we could not distinguish whether this limitation is due to a severe spasticity or a rigid contracture. With ultrasound guidance, a local anesthetic solution, containing 10 mL of 2% lidocaine was injected close to the tibial nerve. After blocking the tibial nerve at the popliteal area, we examined the patient again. There was no change in the passive range of motion (PROM) of the toe flexion. This finding proved that cause of the severe limitation in the toe flexion's ROM was due to the contracture of the joints. Based on this finding, the patient underwent a corrective surgical procedure. If the diagnostic tibial nerve block had not been applied, the patient may require alternatively botulinum toxin injection therapy based on the physical examination.

In some cases, it is quite difficult to distinguish between severe spasticity and contracture formation [1]. We mentioned that the ultrasound-guided motor nerve block injection can be very helpful in these cases in order to decide whether corrective surgery or a botulinum toxin injection is required. Over the last few decades, the

role of ultrasound in carrying out nerve block injections is increasing in comparison to the traditional technique of stimulating the nerve. Ultrasound-guided techniques offer numerous advantages when compared with nerve stimulation. Ultrasound-guided nerve block provides high success rate along with a faster procedure time and a decrease in the number of needle required thereby reducing tissue damage [2].

Ultrasound (US) provides the identification of the blood vessels by color-flow Doppler, which reduces the risk of complications, such as vascular lacerations. Monitoring the spread of the local anesthetics during the injection is another advantage of the ultrasound-guided nerve block [3,4]. In our case, the distribution of the local anesthetics around the nerve appears as a 'halo sign.' (Figure 2) In addition, US does not require patient assistance or active movement; therefore, US is perfectly suited to assist in nerve block injections.

In conclusion, nerve blocks with local anesthetics are used as diagnostic tests resembling the effects of motor blocks to determine their potential effects, which are reversible and temporary. Also ultrasonographically guided nerve blocks are minimal risk procedures, easy to perform and inexpensive [5].

References

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Figure 1: The flexor posture and callus formation under the foot.

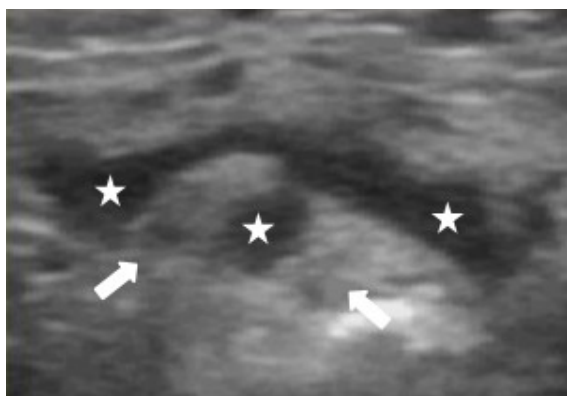


Figure 2: The ultrasonographic halo sign (arrows: tibial nerve, asterisk: the local anesthetics around the nerve).

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Received June 12, 2014; Accepted July 18, 2014; Published July 21, 2014

Citation: Yalcin E, Akyuz M, Aksu I, Ilgu O (2014) Ultrasound Guided Tibial Nerve Block to Distinguish the Spasticity and the Contracture. *J Clin Case Rep* 4: 390. doi:10.4172/2165-7920.1000390

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