

Reducing painfulness and labor intensity and increasing accuracy of tests in Needle Electromyography

Alexander Kharibegashvili

Telavi State University, Georgia

Statement of the problem: Needle electromyography (EMG) has a significant role in the diagnostics of neuromuscular diseases. The drawback of this research is that it is a painful, lengthy, traumatic procedure for the patient and a difficult and laborious one for the doctor. Routine electromyography takes 0.5-1 hours during which the electromyographer constantly moves the needle electrode to and forth in order to obtain optimal location against the motor unit fibers. As a result, the procedure causes persistent pain to the patient and is labor-intensive for the physician. This is particularly true for single fiber electromyography. This test requires proficiency of the electromyographer (manipulating with the electrodes within tenth of millimeters) and collaboration from the patient. Even an electromyographer highly experienced in this methodology needs from one to several hours to conduct the test. The purpose of this study is to Reducing of needle EMG test Painfulness and Labor Intensity, increasing accuracy of tests.

Methodology & Theoretical Orientation: A new type of needle electrode has been developed by us – a telescopic electrode, acknowledged as an invention by the state. It represents a hollow needle with lengthwise groove in which the dielectric rod is located with a microelectrode affixed on it. Result: During the test the hollow needle is immobile inside the muscle; only the dielectric rod is moved, thus sharply reducing the painfulness of the process. A needle electrode may be connected to a micro screw, micro electromotor and be equipped with relevant software, which significantly reduces labor-intensity of

the routine needle electromyography and single fiber electromyography in particular. Accuracy of the test has greatly increased – measuring the transverse dimension of fibers of separate muscles has become possible. New parameters for assessment of functional state of neuromuscular system are proposed.

Conclusion & Significance: The significant reduction in pain may allow the use of needle electromyography among pediatric patients too.

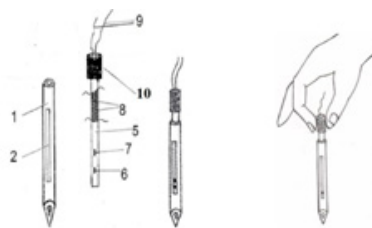


Fig.1 , 1 - hollow needle, 2 - lengthwise groove, 5 - dielectric rod, 6, 7 - microelectrodes, 8 - insulated electrical conductors-wires connected with microelectrodes, 9 - wires connected with wires 8, 10 - handle

Speaker Biography

Alexander Kharibegashvili Graduated from Tbilisi State Medical University. He completed clinical residency in epilepsy at the Institute of Clinical and Experimental Neurology of Tbilisi and an internship in electromyography at the Second Moscow State Medical Institute. Works in the Telavi Regional Hospital as a neurologist.

e: unitelavi@rambler.ru