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ФІЗІОЛОГІЯ – МЕДИЦИНІ, ФАРМАЦІЇ ТА ПЕДАГОГІЦІ: АКТУАЛЬНІ ПРОБЛЕМИ ТА СУЧАСНІ ДОСЯГНЕННЯ

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Conclusion. Adaptation of human organism to regular physical load will result in initially lower HR because of increase of stroke volume of the heart. Such change leads to slight increase of blood pressure even in state of rest. This shows that regular training has beneficial effect on body by making it better adapt to situations of demand like exercise.

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THE EFFECT OF CHRONIC ELECTRICAL STIMULATION ON THE PHYSIOLOGICAL PROPERTIES OF MUSCLES IN PATIENTS WITH MYOTONIC DYSTROPHY

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Background. To date, in Myotonic Dystrophy type 1 (DM1) the rehabilitative interventions have always been aimed at muscle strengthening, increasing of fatigue resistance and improving of aerobic metabolism efficiency whereas the electrical membrane fault has always been addressed pharmacologically. Neuromuscular electrical stimulation (NMES) is a useful therapeutic tool in sport medicine and in the rehabilitation of many clinical conditions characterized by motor impairment such as stroke, cerebral palsy and spinal cord injury.

The aim of our pilot study was to evaluate the effects of chronic electrical stimulation both on functional and electrical properties of muscle in a small group of DM1 patients.

Materials and methods:five DM1 patients and one patient with Congenital Myotonia (CM) performed a home electrical stimulation of the tibialis anterior muscle lasting 15 days with a frequency of two daily sessions of 60 minutes each. Muscle strength was assessed according to the MRC scale (Medical Research Council) and functional tests (10 Meter Walking Test, 6 Minutes Walking Test and Timed Up and Go Test) were performed. We analyzed the average rectified value of sEMG signal amplitude (ARV) to characterize the sarcolemmal excitability.

Results. After the treatment an increase of muscle strength in those DM1 patients with a mild strength deficit was observed. In all subjects an improvement of 10MWT was recorded. Five patients improved their performance in the 6MWT. In TUG test 4 out of 6 patients showed a slight reduction in execution time. All patients reported a subjective improvement when walking. A complete recovery of the normal increasing ARV curve was observed in 4 out of 5 DM1 patients; the CM patient didn’t show modification of the ARV pattern.

Conclusions. NMES determined a clear-cut improvement of both the muscular weakness and the sarcolemmal excitability alteration in our small group of DM1 patients. Therefore this rehabilitative approach, if confirmed by further extensive studies, could be considered early in the management of muscular impairment in these patients. An attractive hypothesis to explain our encouraging result could be represented by a functional inhibition of SK3 channels expressed in muscle of DM1 subjects.

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SALIVARY GLANDS AND THEIR PHYSIOLOGICAL ROLE

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The salivary glands in mammals are exocrine glands, glands with ducts that produce saliva. They also secrete amylase, an enzyme that breaks down starch into maltose. In other organisms such as insects, salivary glands are often used to produce biologically important proteins like silk or glues. In the duct system, the lumina are formed by intercalated ducts, which in turn join to form striated ducts. These drain into ducts situated between the lobes of the gland (called interlobar ducts or secretory ducts).

All of the human salivary glands terminate in the mouth, where the saliva proceeds to aid in digestion. The saliva that salivary glands release is quickly inactivated in the stomach by the acid that is present there but the saliva also contains enzymes that are actually activated by the acid. The parotid gland is a salivary gland wrapped around the mandibular ramus in humans. It is one of a pair being the largest of the salivary glands, it secretes saliva through Stensen's ducts into the oral cavity, to facilitate mastication and swallowing and to begin the digestion of starches. The secretion produced is mainly serous in nature and enters the oral cavity via Stensen's duct. It is located posterior to the mandibular ramus and in front of the mastoid process of temporal bone. This gland is clinically relevant in dissections of facial nerve branches while exposing the different lobes of it since any iatrogenic lesion will result in either loss of action or strength of muscles involved in facial expression.

The submandibular glands are a pair of glands located beneath the lower jaws, superior to the digastrics muscles. The secretion produced is a mixture of both serous fluid and mucus, and enters the oral cavity via Wharton's ducts. Approximately 70 % of saliva in the oral cavity is produced by the submandibular glands, even though they are much smaller than the parotid glands. You can usually feel this gland, as it is