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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

in the upper neck and feels like a rounded ball. It is located about two fingers above the Adam's apple (on a man) and about two inches apart under the chin.

The sublingual glands are a pair of glands located beneath the tongue, anterior to the submandibular glands. The secretion produced is mainly mucus in nature, however it is categorized as a mixed gland. Unlike the other two major glands, the ductal system of the sublingual glands do not have striated ducts, and exit from 8–20 excretory ducts. Approximately 5 % of saliva entering the oral cavity comes from these glands. There are 800–1000 minor salivary glands located throughout the oral cavity within the submucosaof the oral mucosa, apart from areas including the anterior third of the hard palate, the attached gingival and the anterior third of the dorsal surface of the tongue. They are 1–2 mm in diameter and unlike the other glands, they are not encapsulated by connective tissue only surrounded by it. A minor salivary gland may have a common excretory duct with another gland, or may have its own excretory duct. Their secretion is mainly mucous in nature (except for Von Ebner's glands) and have many functions such as coating the oral cavity with saliva. Problems with dentures are sometimes associated with minor salivary glands. Von Ebner's glands are glands found in circumvallated papillae of the tongue. They secrete a serous fluid that begin lipid hydrolysis and also they facilitate the perception of taste.

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VIOLATIONS OF COLOR VISION IN ARAB POPULATIONS

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Color blindness (daltonism) is a hereditary, less commonly acquired feature of vision, expressed in the inability to distinguish one or more colors and shades. It was named after John Dalton, who first gave a description of one of the types of color blindness, based on his own sensations in 1794.

Functional defects of color perception can be caused by hereditary factors and pathological processes at different levels of the visual system. Congenital disorders of color vision are genetically conditioned and recessively associated with sex. They occur in about 8 % of men and 0.4 % of women. Although women' color vision disorders are much less common, they are carriers of the pathological gene and its transmitters. Some regularities of the transfer of colorblindness by inheritance were discovered more than 200 years ago, which were named “Nasses Law” and “Horner’s Law”, the Swiss researcher, Horner, showed that the color blindness is linked to the floor and is inherited by the recessive type (1876). At the beginning of the XX century it became clear that the corresponding loci are in the X chromosome and normal vision is dominant in relation to color blindness.

People with a color anomaly are all trichromates, that is they like people with normal color vision, need to use three primary colors to fully describe the visible color. However, the anomaly worse distinguishes some colors than trichromates with normal vision, and in color matching tests they use red and green in other proportions.

The frequency of occurrence of color vision anomalies varies in different populations. For Europe it is 7–8 %, for subequatorial Africa, America and Australia – 1–3 %. It can be assumed that among the nationalities engaged in hunting and gathering,the ability to normal perception of color was an important sign fr men, and the genes that caused its violation were eliminated during the selection process. The maximum value (0.10) is noted in the Arabs, and the minimum (0.0083) for the indigenous population of the Fiji Islands (*table 1*). The average world frequencies for individual contingents are located from a minimum the a maximum, then it can be seen that these frequencies correspond in general terms to the level of socio-economic development of the this people who are request.

Table 1

Frequency of cases of color blindness in men in different populations (according to Harrison J., Wainer J., Tanner J., 2009)

Population	Frequency
Arabs	10,0
Eskimos	2,5
Swedes	8,0
Zaire	1,7
Englishmen	6,6
Australian Aborigines	1,9
Chinese	5,0
Fiji citizens	0,8

The maximum of color vision disorders in Arab population can be explained by the current trend towards the creation of blood bearing marriages. For prevention, it is necessary to conduct medical genetic counseling and per-conceptual training, as violations of color perception are a contraindication foe the driver to work on all types of transport, service in some types of troops and certain industries, namely, there professions are popular parents’ choose for sons future activities in a large Arab families.