

Apoptosis occurrence between white and red muscles in different denervation periods

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Countless alterations happen in the peripheral nerve and in the muscle innervated by it in the event of a nervous damage. In the nervous fiber occur the desmyelination of the segment that is separated of the metabolic area of the neuron, and the degeneration of the axon, called Wallerian degeneration. In this muscle, as the denervation time elapses owing to the decrease of contractive structures and alterations in the number of membranous organelles, there is a reduction in myosin and actine syntheses, which in turn results in the decrease of fibers size and myofibrils resorption. The term apoptosis has been used since 1972 in researches accomplished by Kerr and collaborators, when the basic characteristics were described through its morphologic aspects that involve condensation of the chromatin, fragmentation of the nucleus, loss of the adherence among the cells and DNA fragmentation. This type of cellular death differs from that found in other tissues, since a very similar way should be activated to eliminate cells in the muscular development. This indicates that a very similar way of cellular death must be activated to eliminate cells in the muscular development and in the adult muscle after the denervation. Among the most recent techniques of apoptotic marker, the most accepted it has been the technique of the TUNEL where the termination 3'-OH resultant of such spalling is marked with nucleotides modified with deoxyigenin for the enzymatic action of the (TdT), which properties in the detection of apoptotic cells is more selective than the necrotic cells, and is more specific than DNA polymerase. Through other techniques, we decided by the TUNEL technique, which is the most accepted technique for marking this phenomenon, to confirm the occurrence of apoptosis in two muscles (red and white). Two types of skeletal striated muscle were compared submitted to experimental denervations by different periods, the called red muscle (soleous muscle) resistant to the fatigue and of slow contraction, and a white muscle (EDL muscle) of precocious fatigue and fast contraction. In this work the TUNEL was used as main technique in the identification of apoptosis. It was demonstrated that such phenomenon occurs more in accentuated way at the initial moments of denervation. It was observed that the red muscle responds more deeply to denervation than the white muscle. One can infer that the removal of the main cell function, the contraction, in the case of the skeletal striated muscle, triggers the chain reactions that culminate in apoptosis.