

Key words: sepsis, systemic inflammatory response, clotting system, fibrinogen, prothrombin, hyperbilirubinemia.

THE INFLUENCE OF THE PULSED ELECTROMAGNETIC FIELDS ON THE PROLIFERATION AND MORPHOLOGY OF MESENCHYMAL STEM CELLS

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Stimulation of cell division is the source of physiological recovery that provides the most reliable perspective in tissue engineering. A non-invasive and accessible method of amplifying the process of cell division is using electromagnetic fields.

Our **purpose** was to analyze the pulsed electromagnetic fields capacity to influence the cellular proliferation *in vitro*. For this purpose, were used cell cultures of mesenchymal stem cells, derived from 14 days aviary embryos. Cells were subjected to a quasi-rectangular pulsed electromagnetic field with duration of 300 μ s, a frequency of 7.5 Hz, 2hours each day for 7 days.

The **results** indicate a rise with 25% of the number of cells subjected to the magnetic field, and this report was not influenced by the cell density. The cell morphology showed no difference between groups.

These results suggest the possibility of using low frequency pulsed electromagnetic fields in tissue engineering with the purposes to accelerate mesenchymal stem cell division, which can be applied in bone regeneration therapy.

Key words: Stem cell, pulsed electromagnetic field, cell culture, tissue engineering, bone regeneration.

CONSTITUTIONAL FEATURES OF THE CENTRAL BRANCHES OF SPHENOIDAL SEGMENT OF MIDDLE CEREBRAL ARTERY

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Pathology of the central perforating arteries of the brain has an important place among the cerebrovascular diseases. Since the structure of a hemorrhagic stroke hypertensive intracerebral hemorrhage occupy the first place. From all off the central perforating arteries, the greatest interest presents the lentikulostriales artery middle cerebral artery (MCA), a gap which leads to the formation of hemorrhages in putamen area. Due to the functional significance of these arteries goal: to identify options for building lentikulostriales arteries depending on the length of the sphenoid segment of the MCA in patients with different forms of the skull. The study was conducted at the Department of Topographical Anatomy and Operative Surgery KrasGMU. Studied 68 drugs with drawn from the brain dead who died of causes unrelated to the CNS. Prior to removal of the brain were measured longitudinal and transverse size of the skull with cranial index calculation and allocation: dolicho, meso-and brachycephalic. In the brain after

the brandy seized arterial and microdissection, studied and extending from the SMA it lentikulostriales artery. Sphenoid segment of the area (SMA) arteries: from the bifurcation of the internal carotid artery to the bifurcation. The average length of the sphenoid segment amounted to $15,9 \pm 2,3$ mm. According to the literature there are three groups lentikulostriales arteries: medial group - direct the course of the artery (4 branches), the intermediate group - in the form of candelabrer-shape artery (up to 8 branches), and lateral group of S-shaped arteries (up to 9vetvey). This type of structure lentikulostriales arteries is called a «classic.» According to our data, this type of structure occurs in 62% of cases, most often in dolichocephals (80%). Besides the classical type of structure we have selected an intermediate type of structure, in which the background to the medial and lateral group of arteries in the middle parts of the MCA was located only one type of container beam, radiating to the substance of the brain up to eight branches. This type of structure met lentikulostriales arteries in 20% of cases, most often in brachycephalic (25%). Of greatest interest is allocated to us, the beam type structure lentikulostriales arteries. In this type of structure throughout the MCA in the middle parts of the beam had the only large vessel, smack in the matter of the brain up to 14 branches. This type of structure occurs in 18% of cases. Most often in brachycephalic (30%) and did not meet with dolichocephals. The analysis of options for building lentikulostriales arteries, depending on the length of the sphenoid segment of the MCA. The classic type of structure met with the length of the sphenoid segment of 3.1 mm to 20mm. The intermediate type of structure - with a length of 11.8 mm to 18.1 mm. Beam-type structure with a length sphenoid segment from 11.7 to 15.2 mm. The correlation analysis between the length and type of sphenoid segment lentikulostriales arteries revealed that the shorter barrel of the AGR, the more likely the beam and an intermediate type of structure. Thus, the length of the sphenoid segment can serve as a guide for determining the type of structure lentikulostriales arteries.

Key words: (the) lenticulostriales artery, (the) middle cerebral artery, (the) perforating arteries of the central brain

THE EFFECTS OF DIFFERENT INHIBITORY PATHWAYS OF PROSTAGLANDIN E2 BIOSYNTHESIS ON RENOMEDULLARY INTERSTITIAL CELLS IN RATS

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Introduction: Renomedullar interstitial cells (RMICs) are the prevalent cells in inner medulla. The multiple lipid granules found in their cytoplasm are believed to be storage units for precursors of prostaglandins (PGs), prostacyclins and medullipin, particularly PGE₂. The aim of the study was to examine the effects due to the inhibition of PGE₂ synthesis via different pathways on the RMIC function, the number of lipid granules, medullary hyaluronan (HA) content and cell viability.

Materials and Methods: Thirty-two adult male Wistar albino rats, 180-200g, were randomly divided into four groups (n=8): The control group was treated with intraperitoneal (ip) 0.9% isotonic salt water; the second group was injected with dexamethasone (DEX) (3 mg/kg, 10 days), inhibiting AA release and PG synthesis by PLA₂; the third group was treated with ip indomethasine (IND) (1 mg/kg, 10 days) to inhibit non-specific COX; the fourth group was injected with ip celecoxib (CXB) (1 mg/kg, 10 days) to examine selective COX-2 inhibition. Ten days later, the dissected renal medullas of sacrificed animals were analyzed with light and electron microscopy. The lipid granules were counted in 50 random RIMCs for each animal (x 6.000 magnification).