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Тезис

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Neurosurgery of the 21st century

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In the 21st century neurosurgery has reached absolutely new heights: contemporary neurosurgeons actively develop and utilize methods which can help to perform extremely complex brain and spinal cord surgery and effectively treat diseases that were previously considered beyond cure.

Neurosurgeons actively develop new methods of operative treatment leading to formation of specialized branches of neurosurgery such as endovascular and stereotactic surgery. During the last few years, a completely new type of surgery, so called minimally invasive neurosurgery, has started to gain much prominence. This method allows to remove large and deep-seated tumors by using only keyhole surgery which became possible due to application of special neuroendoscopes.

Recently, an opportunity for development and practical application of restorative or so called supportive neurosurgery via neural transplantation by using embryonic (or fetal) tissue has arisen. This method suggests using primary (stem) nerve cells of human or animal embryos to replace the tissue of various structures and bodies of brain and spinal cord which was damaged by trauma or as a result of a disease. According to experimental and even clinical data, cells of embryonic tissue transplanted as a result of surgery start their differentiation according to the place of transplantation, contact recipient's neurons and are capable of performing the functions of the tissue they have been transplanted to. The future belongs to supportive neurosurgery as even now it is considered the most productive and promising method of treatment for both neurosurgical and neurological diseases of 21st century.

Recently, Russian neurosurgeons started using the cold plasma method which helps to conduct very complex neurosurgeries. The cold plasma apparatus is equipped with special electrodes that are capable of dissecting bone tissue or removing paravertebral tissues during malignant tumor treatment. This method is especially important for brain surgeries.

The future of neurosurgery lies in the improvement of methods of diagnostics and surgical approach described above.

Key words: neurosurgery