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Siberian Experience Of Stereotactic Microelectrode Guided Thermodestruction

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Introduction: The main tendency of modern functional neurosurgery is desire for minimally invasive treatment with destructive technology renaissance on new safety level with neurophysiological navigation monitoring.

Methods: during the period 2011-2012 28 patients have undergone stereotactic deep brain structure lesioning. Patients were divided into two groups: first group included 22 patients (16 male, 6 female, age 47 to 74 years) with late stage Parkinson disease, second group included 6 patients (2 male, 4 female, age 36 to 68) with pharmacology resistant chronic pain syndromes of diverse etiology (VAS 9/10). All surgeries were done with Cosman-Roberts-Wells stereotactic frame and Radionics planning system. Definitive verification of targets was performed with intraoperative neurophysiological navigation monitoring and microelectrode recording data (MicroGuide Pro, AlphaOmega).

Results: In group with Parkinson disease 15 patients underwent unilateral ventro-dorsal pallidotomy and 7 patients – ventrointermediate thalamotomy. In all cases surgery allowed to improve the quality of live, average tremor and rigidity regression in contralateral limbs was 62% (UPDRS scale), dystonias and levodopa-induced dyskinesias were 76% less common. All patients in the second group underwent bilateral anterior cingulotomy, which allowed to achieve statistically significant lowering of sensitivity to pain (VAS 3-4/10), improvement in daily activities and decrease in number of depressive disorders. Intake of narcotic analgesics, in the post-operative period, decrease by 74%, two patients were completely drug-free. There were no perioperative complications in both groups.

Conclusion: intraoperative neurophysiological navigation allows conducting stereotactic destructive surgeries with submillimetric precision, achieving maximal individual clinical effect with lower risk of perioperative complications.