

Complications after DBS surgery

N.P. Denisova, E.A. Khabarova, A.B. Dmitriev

Federal Neurosurgical Center

Novosibirsk, Russia

Natalia Denisova, +79237400811, e-mail: nataden@inbox.ru

Object: The main object of this study was to assess the incidence of various surgical complications occurring both during and after DBS device implantation in patients with movement disorders. We have also tried to develop some methods for risk avoidance.

Methods: All patients with movement disorders who were operated (DBS implantation and IPG replacements) between 2013 and 2020 were entered into the study. Complications were classified into operation-related, hardware-related and stimulation-related. Operation-related complications included intracranial hemorrhages and pneumocephalus, venous air embolism. Hardware-related complications included fracture of electrodes or connectors, electrode migration, infection and erosion. Stimulation-related complications included behavior changing and psychiatric conditions.

Results: From 2013 to July of 2020 181 DBS systems were implanted and additionally 49 patients required IPG replacement because of low battery. Two patients got new systems because of infectious complications. Intraoperatively there were three cases (1,65%) of venous air embolism. There was one symptomatic cerebral hemorrhage (0,55%), one patient (0,55%) had some blood in the subarachnoid space near the burr hole which caused 2 generalized epileptic seizures. There were two patients (1,1%) with electrode fractures, and six patients (3,3%) with pulse-generator infection, one patient (0,55%) with skin erosion above electrode. Twenty-four patients (13,2%) suffered from reversible psychiatric

symptoms in early period after DBS and in nine patients (4,9%) we observed some behavior changes which required program correction.

Conclusions: DBS is an effective and safe surgical treatment for movement disorders but it can cause some specific complications. Careful patient selection, planning and intraoperative attention to details can help to avoid some of them. Also thorough postoperative care and creative approach during programming can contribute to successful outcome.