INFECTIONS IN VEGETATIVE PATIENTS AFTER DEEP BRAIN STIMULATION (DBS) SURGERY AT DUBRAVA UNIVERSITY HOSPITAL, ZAGREB, CROATIA

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AIM: Little is known about infection incidence rate in patients in vegetative state (VS) after deep brain stimulation (DBS) surgery for the purpose of restoring consciousness. Comatose patients are at risk for postoperative infections due to their substantial colonization with gram-negative and often multiresistant bacteria. Our aim was to examine the infection rate in VS-patients after DBS implantation and to evaluate our microbiological protocol and perioperative antimicrobial prophylaxis for DBS surgery in such patients.

METHODS: In the period of two years (2011-2012) 14 VS-patients were admitted to Department of Neurosurgery, Dubrava University Hospital, for DBS implantation. Before the surgery microbiological surveillance samples were obtained, including nasopharyngeal, pharyngeal and rectal swabs, tracheal aspirates and tracheal cannula swabs, urine, decubital wounds swabs, gastric tube swabs and skin swabs. Isolates considered significant included Enterobacteriaceae, *Pseudomonas* spp., *Acinetobacter baumannii*, *S. aureus* (oxacillin sensitive and methicillin-resistant, MRSA), *Stenotrophomonas maltophilia* and *Candida* spp. Perioperative prophylaxis was tailored according to antimicrobial sensitivity tests. In the follow-up period patients were monitored for any kind of serious infection.

RESULTS: All patients were critically colonized with multiple significant isolates, including Enterobacteriaceae producing extended spectrum beta-lactamases (12/14, 86%), *P. aeruginosa* producing carbapebemases (12/14, 86%), multiple-drug resistant *A. baumannii* (11/14, 79%), MRSA (7/14, 50%) and *S. maltophilia* (4/14, 29%). Since most isolates were resistant to antibiotics usually administered for neurosurgical prophylaxis, each patient received an antimicrobial regimen modified according to antimicrobial sensitivity tests. In the follow-up period there were two patients that developed wound infection (2/14, 14%), one at pectoral site 31 months postoperatively, which resulted in complete DBS device removal, and the other one presented with head wound infection 3 months postoperatively. No central nervous system (CNS) infections were observed.

CONCLUSION: Most of our VS-patients developed no infection following DBS surgery. Since there are no known guidelines for antimicrobial prophylaxis in VS-patients prior to DBS surgery, our microbiological surveillance protocol and individually tailored perioperative prophylaxis remain the standard procedure at our hospital. More studies are needed to examine the cost-effectiveness of such approach.

Keywords: vegetative state, minimally conscious state, deep brain stimulation, infection, microbiological surveillance, antimicrobial prophylaxis

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