

Immune-Suppressive Effect of Two Different Anaesthesia Methods and Extent of Surgery on the Status of HHV-6 and HHV-7 Infection

*Arnīs Vilks¹, Santa Rasa², Simona Donina¹,
Modra Murovska², Biruta Mamaja¹*

¹ *Rīga East Clinical University Hospital, Latvia*

² *Rīga Stradiņš University, A. Kirchenstein Institute of Microbiology and Virology, Latvia*

Introduction. Beta-herpesviruses HHV-6 and HHV-7 are highly prevalent in the population of healthy individuals. After primary infection, HHV-6 and HHV-7 persists in the host and is detectable in multiple tissues, including cells of immune system. Reactivation is common in a state of immunosuppression and is associated with severe clinical manifestations and increased mortality.

Aim, Material and Methods. The aim of the study was to detect the effect of general (GA), regional anaesthesia (RA) and extent of surgery on the status of HHV-6 and HHV-7 infection in 89 patients. Study group (n = 58) underwent free flap (average 5.7 hours) and control group (n = 31) short-term plastic (average 43.3 minutes) surgery. 35 of study group patients underwent GA, 23 – RA. In control group, 16 patients – GA, but 15 – RA. Viral infection, total number of lymphocytes, and subsets were detected before and 10 days after the surgery. Presence of HHV-6 and HHV-7 DNA sequences in peripheral blood cells-marker of latent and in plasma-marker of active infection.

Results. Comparing the total number of lymphocytes before and directly after the surgery, we found statistically significant decrease in the number of lymphocytes after surgery in the study group with GA (p = 0.01), no statistically significant difference was found in patients with RA (p = 0.25). No changes have been detected in control group irrespective of anaesthesia applied. In the study group, we detected the statistically significantly frequent (p > 0.05) activation of HHV-6 and HHV-7 infection after the surgery with GA, whereas with RA activation frequency was not statistically significant (p < 0.05). In the control group, any statistically significant changes were detected irrespective of anaesthesia method applied. Decreased of total lymphocyte count after the surgery in study group patients with GA was statistically significantly associated with the activation of HHV-6 and HHV-7 infection (p = 0.04).

Conclusions. Our study results suggest that general anaesthesia and greater extent of surgery have more profound immune-suppressive effect and is leading to activation of HHV-6 and HHV-7 infection.