Abstract: The neurovirulence and replication potential of several mumps virus strains, including Leningrad-3 mumps vaccine virus (FSUE SIC "Microgen", Russia) and wild type strains isolated in the Novosibirsk Region (Russia), were assessed in rat tests. The mean neurovirulence scores of the Leningrad-3 virus (
In this work we report the mumps vaccine virus shedding based on the laboratory confirmed cases of the mumps virus (MuV) infection. The likely epidemiological sources of the transmitted mumps virus were children who were recently vaccinated with the mumps vaccine containing Leningrad-Zagreb or Leningrad-3 MuV. The etiology of the described cases of the horizontal transmission of both mumps vaccine viruses was confirmed by PCR with the sequential restriction analysis.
Postvaccination immunity was studied in the children and teenagers without a history of clinical mumps infection, who had been immunized with the Leningrad-3 mumps vaccine. The level of specific IgG in ELISA and that and spectrum of their neutralizing activity against a vaccine strain and three heterologous mumps virus (MV) strains (genotypes A, C, and H) were measured. The investigation included 151 sera from the vaccinees aged 3 to 17 years, possessing the detectable specific IgG titers in ELISA and the detectable neutralizing titers against the vaccine strain. 97.4% of the vaccinees had neutralizing activity against 1-3 heterologous MV strains. A preponderance of neutralizing titers against heterologous MV strains by 1-log2 in some sera (6.5-32.5 depending on age) was most likely to suggest that the vaccinees’ had been in contact with these virus strains in the past. In our investigation, a combination of positive IgG titers and neutralizing titers against the vaccine strain 2-log2 or higher provided the protection of the vaccinated children and teenagers against the symptomatic infection. There was a pronounced buster effect of the second immunization and a drop in the neutralizing activity of the sera from the vaccinated children and adolescents over time after the first and second immunization.