

Molecular identification of acute viral gastrointestinal infection causative agent

Authors: L.Eglite¹, G.Muzje¹, A.Puskarjova¹, I.Pole¹, O.Savicka^{1,2}

1- Riga East University hospital (REUH), Laboratory Service, Latvian Centre of Infectious Diseases laboratory, National Microbiology Reference Laboratory (NMRL), Riga, Latvia

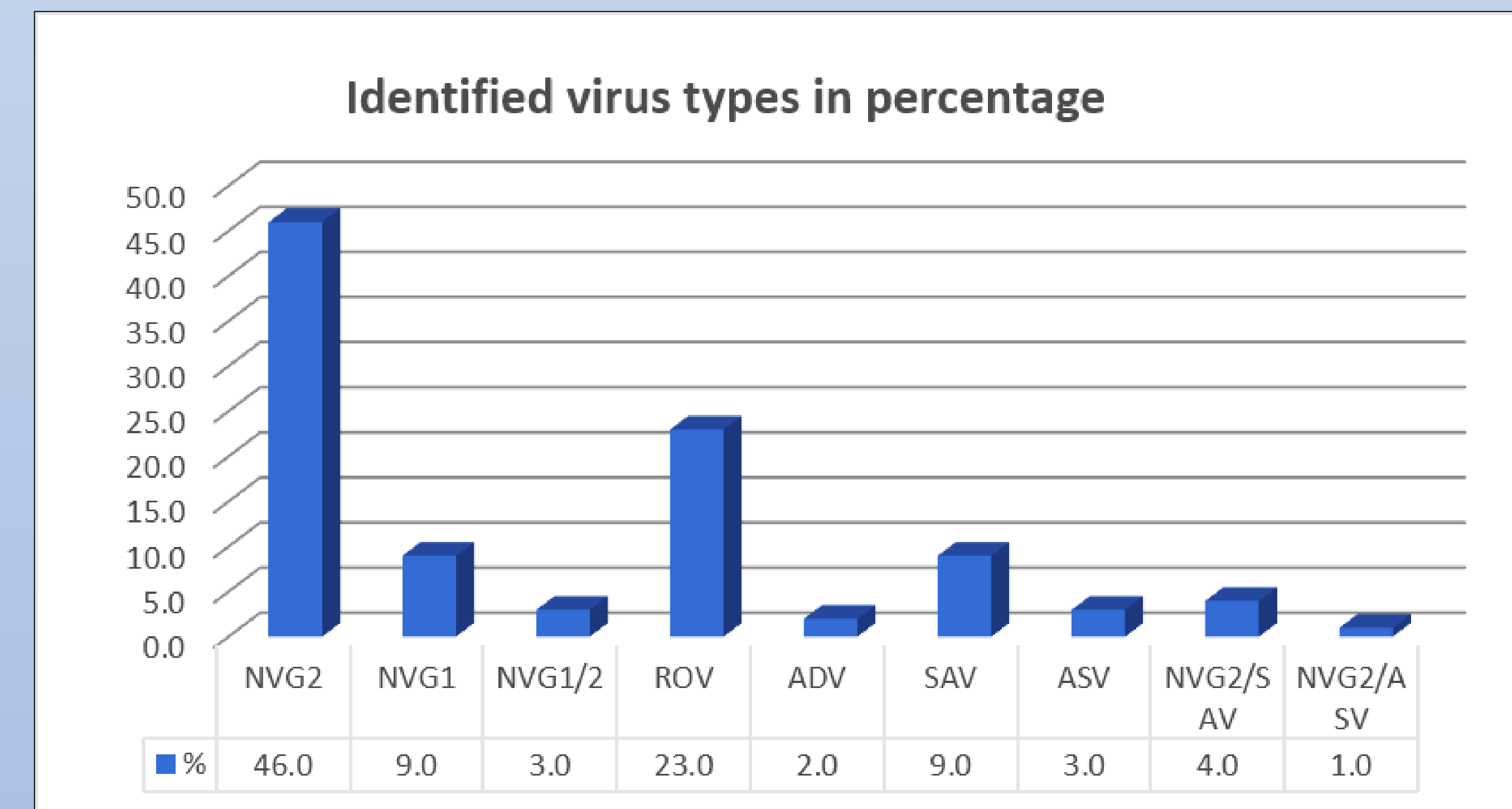
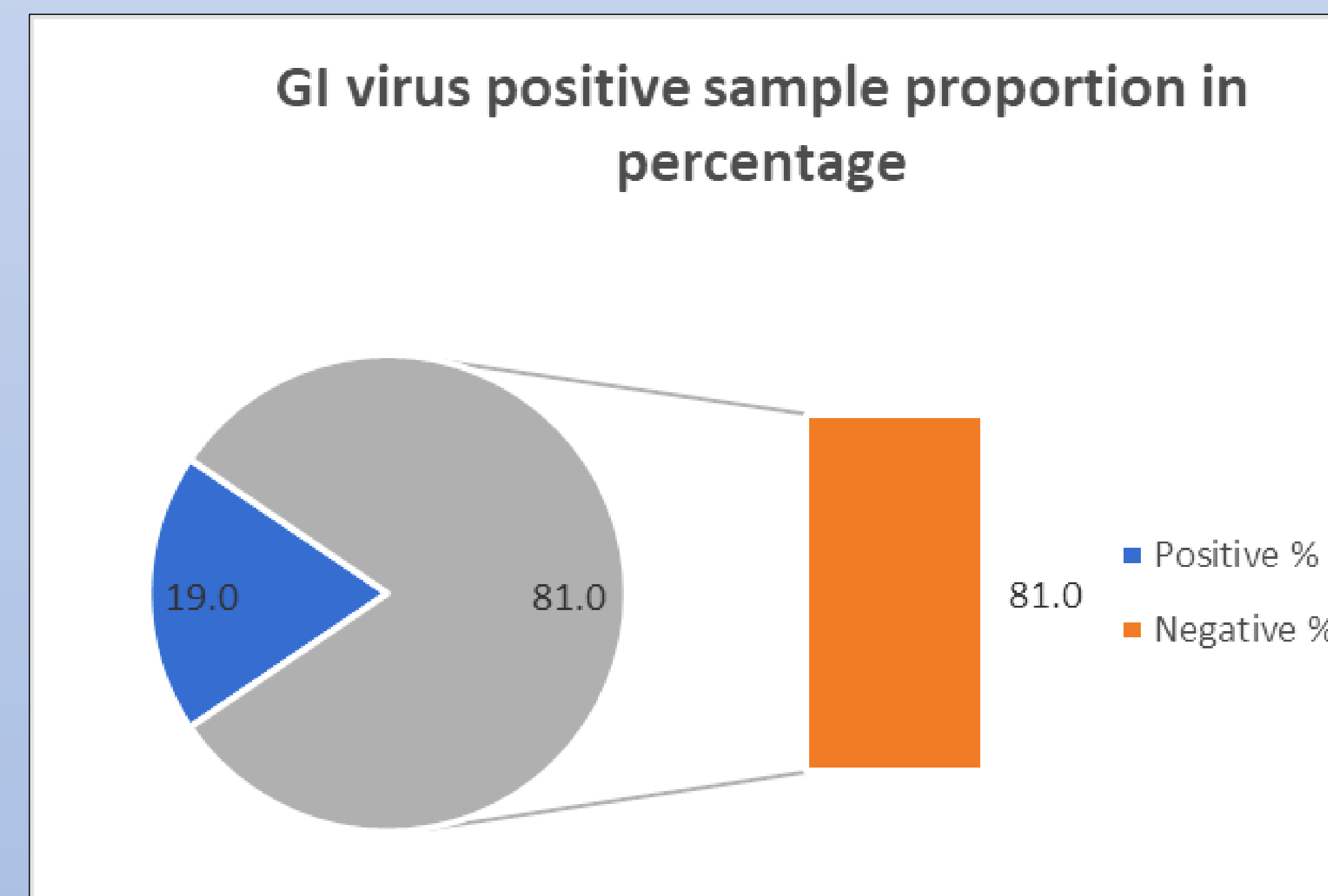
2- Riga Stradiņš University, Department of Infectology, Riga, Latvia

Objectives

Acute gastrointestinal (GI) infection can be caused by various infectious agents such as viruses, bacteria or parasites. Discrimination of the ethiological agent of diarrhea is essential for selecting of most appropriate treatment. GI viruses can cause acute diarrhea in infants below the age of 5, what could be fatal. Identification of virus types is crucial for monitoring regional outbreaks. According to the data of the Centre for Disease Prevention and Control (CDPC) 11 100 viral GI infection cases were detected in Latvia during the period 01.2019 – 03.2024, of those 3730 (34%) were Rotavirus cases. **The aim** of the study was to identify the circulating virus types with a molecular method in NMRL.

Results

- Positive GI virus cases: 100/526 (19%);
- Virus distribution:
 - Norovirus G2 (NVG2): 46/100 (46%);
 - Rotavirus (ROV): 23/100 (23%);
 - Norovirus G1 (NVG1) and Sapovirus (SAV): 9/100 (9%);
 - Astrovirus (ASV): 3/100 (3%);
 - Adenovirus (ADV): 2/100 (2%);
 - Combined Infections:
 - NVG2 and SAV: 4/100 (4%);
 - NVG1 and NVG2: 3/100 (3%);
 - NVG2 and ASV: 1/100 (1%);
- Infected Male/Female Ratio: 48/52;
- Average Age of Infected Individuals: 38.7 years;
- Children Sample Proportion: 50/526 (9%);
- Children Infection Rate: 29/100 (29%) with 83% of infected children below 5 years.



Materials and methods

- Study Period: January 2019 – March 2024;
- Samples: 526 faecal samples from different regions of Latvia;
- Testing Method: Real-time PCR (Allplex GI-Virus Assay, Seegen);
- Nucleic Acid Extraction: NucliSENS easyMAG (BioMeriux) automated system;
- Demographics: Age range from infants to 97 years; male/female ratio: 243/283.

Conclusions

- The most prevalent GI virus was NVG2 (46%), followed by ROV (23%).
- Combined GI virus infections were observed rarely.
- There was a discrepancy between the molecular data and the epidemiological data from the Centre for Disease Prevention and Control (CDPC), which reported a higher ROV infection rate (34%).
- The lower ROV rate in the study may reflect the successful immunization program in Latvia.
- The data suggests the importance of discriminating between GI virus types for better epidemiological monitoring, especially for NVG2.
- A significant proportion of GI virus infections occurred in children, particularly those under 5 years, indicating a high-risk group.

