

Prospects for further research: Establishment of ABCG2 dysfunction and renal uric acid underexcretion type as risk factor for urolithiasis is necessary. It remains to be further investigated how ABCG2 dysfunction and this type are associated with stone formation. Further research is required.

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## THE GENOTYPIC SPECIES OF ROTAVIRAL INFECTION IN INFANT IN REPUBLIC OF MOLDOVA

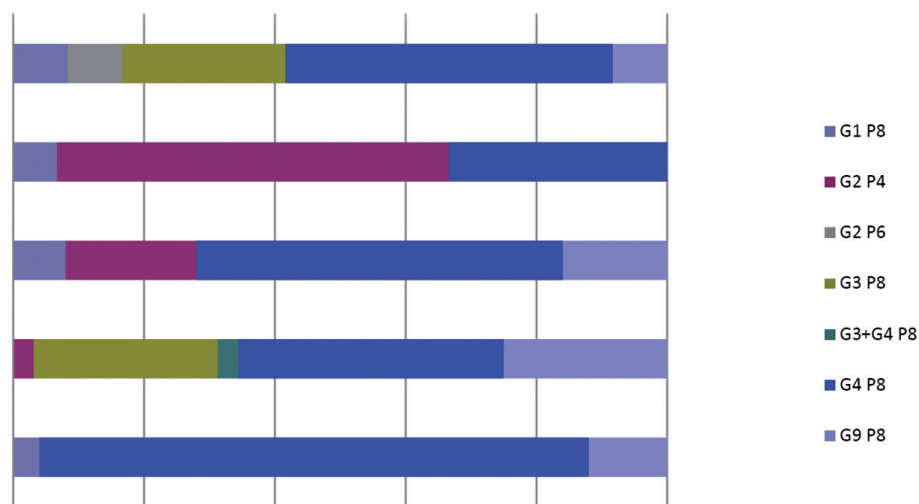
Donos A., Cojocaru R., Albina – Mihaela Iliev  
USMF "Nicolae Testemițanu", Republic of Moldova

Rotavirus (RV) is the most common cause of acute gastroenteritis (GEA) worldwide, affecting 95% of children up to the age of five. Globally, RV infection is estimated to cause 3.6 million episodes of GEA per year. Until the implementation of anti-rotavirus immunization, around 2 million children with GEA of rotavirus etiology were hospitalized worldwide each year. By the age of 5, virtually all children have sustained rotavirus infection, this being the first cause of severe diarrhea with dehydration in infants around the world. In low-income countries, the average age of primary rotavirus infection is between 6 and 9 months (80% of cases occur in infants under one year of age), while in high-income countries the first episode sometimes occurs between 2 and 5 months (65% of cases were seen in infants < 1 year). WHO estimates that before the occurrence of the anti-rotavirus vaccine there were approximately 453,000 deaths per year among children with rotavirus gastroenteritis (GERV) worldwide. These data accounted for approximately 5% of deaths among children, with a specific mortality rate of 86 deaths per 100,000 children < 5 years. Low-income countries from Africa and Asia are hosts for almost 90% of the deaths caused by rotavirus thanks to the poor quality of health care. Implementation of sentinel surveillance of rotavirus infection in infants from the Republic of Moldova in 2008 showed a high rate of this infection (40.0%) being an argument in recommending anti-rotavirus immunization in children within the National Immunization Program Purpose: to study the clinical-evolutionary, molecular and epidemiological aspects of rotavirus infection in infants.

**Materials and Methods.** The study was carried out between 2012 and 2016 and included children admitted to IMSP Municipal Children's Clinical Hospital no. 1, acute diarrheal diseases section. In the study, 193 infants with the acute diarrheal disease were monitored, under standard framework of sentinel surveillance. Depending on

the vaccine status, the study sample (n = 193) was divided into group I (121 patients) - children with unvaccinated rotavirus infection and group II (72 patients) - children with vaccinated rotavirus infection. The biological material was virologically examined for rotavirus infection using the ELISA serological response and genotyping in the polymerase chain reaction (PCR). In order to confirm the rotaviral etiology of GEA, the faecal subjects of the patients in the study sample were examined. Virological investigations were carried out in the bacteriological laboratory of the National Center for Preventive Medicine in Chişinău. Test Specificity - 96-100%, Test Sensitivity - 94-100%. ELISA test detection limit:  $\geq 7 \times 10^5$  viral particles per ml of the sample being investigated.

**Results.** From the total number of genotyped samples, the incidence of genotypes identified in patients with rotavirus infection during the preclinical period, the most common genotypes were G4P [8], G3 P [8] and G9P [8]. In the postvaccinal period, their frequency fell to the first place with the genotypes G2 P [4] and G4 P [8]. The genotypes G4, G2, G9 that cover a large proportion of rotavirus strains in the population of the country according to monitoring and sentinel surveillance data in children up to the age of 5 years (Fig. 1) are present in the vaccine used in the country.



**Figure 1.** Distribution of genotypes for the years 2012-2016

The rotaviral infection is high in the cold season (January-March). Children in the study are from 1 to 12 months old, with an average age of 7.2 months. Prevalence of feminine gender (54.4%) predominates compared to males (45.6%).

Mixed etiology - intestinal infection was predominant in the 1st study group (30.6% children) compared to group II where the mixed share of viral infection was lower (26.4%). Higher hospitalization duration, more severe dehydration (by 3%), the presence of severe respiratory diseases (pneumons, bronchitis, 21%) are higher in the study group I (unvaccinated children) compared to group II vaccinated children). Bacterial infection associated with acute diarrheal disease was present in *Proteus mirabilis*, *Klebsiella pneumoniae*, *Staphylococcus aureus*, *Escherichia coli*, *Proteus vulgaris*, and *Providencia mixofaciens*.

### Conclusions

- Morbidity by rotavirus infection (IRV) in the Republic of Moldova decreased considerably as a consequence of the implementation of the anti-rotavirus vaccine, keeping the seasonality of the infection during the cold season of the year with an increased infestation of infants older than 6 months.

- The most common genotypes in the prevaccine period were: G9 P [8], G3 P [8], G4 P [8] and postvaccine period: G4 P [8], G2 P [4]. These results demonstrate the need to continue monitoring, harvesting rotaviruses in children to strengthen control measures and respond to rotavirus infection.

- Rotavirus infection evolved as mono-infection in 67.3% of cases and mixed-infection in 32.7% of cases. It is associated with severe respiratory infections and pathogenic enterobacterial infections in both groups where severe clinical forms were recorded. These circumstances call for differentiated approaches in the treatment of rotavirus infection identified separately and in combination with other pathologies.

- The results of the study reconfirmed the necessity to implement the Rotarix vaccine containing genotypes G4, G2, G9 through the National Immunization Program (2012) to reduce the burden of rotavirus infection on the health system in the Republic of Moldova.

**Key words:** *diarrhea, rotavirus, children, infants.*

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## PROCALCITONIN CAN STRATIFY SEVERITY OF INFECTION IN EMERGENCY DEPARTMENT

Miklic L<sup>1</sup>, Rogic D<sup>2</sup>, Loncar Vrancic A<sup>2</sup>, Gornik I<sup>1,3</sup>

<sup>1</sup>Department of Emergency Medicine, University Hospital Centre Zagreb,

<sup>2</sup>Clinical Department of Laboratory Diagnostics, University Hospital Centre Zagreb,

<sup>3</sup>University of Zagreb, School of Medicine

Procalcitonin (PCT) is a diagnostic marker of severe bacterial infection and sepsis. C-reactive protein (CRP) has been shown by several studies to have a low correlation with the severity of illness, while PCT was shown to have higher sensitivity and specificity for infection than CRP. It is also claimed that it reflects severity, progression, and prognosis of the disease better than CRP and also give indications of necessity and duration of antibiotic therapy. Also, monitoring the kinetics of the PCT concentration under antibiotic therapy can adequately display the progression of the systematic inflammatory response and be an indication of the effectiveness of treatment. Furthermore, PCT permits the evaluation of patient risk with respect to mortality and success of treatment. CRP has been employed as an objective marker of disease, but experience has shown that it almost never changed significantly. We have investigated if PCT could be a better marker of disease course and lead to better decision making in the Emergency department (ED).

**Materials and Methods:** Patients with various infections treated and observed in the ED, University Hospital Centre Zagreb were included into the study. CRP and PCT were measured before initiating treatment and before discharge from the ED; minimum time difference was set to 6 hours, maximum stay in the ED is 24 hours. Admission/discharge decisions were based blinded to PCT test results and patients were evaluated by a different medical team as having favourable or unfavourable disease course regardless of the admission decision. Patients who were identified as being treated in the ED because of lack of beds on the wards were excluded. Data were analyzed with non-parametric tests.

**Results:** 273 patients were included in the study during the first seven months, but after excluding patients with missing data, short observation (<6 h) or those just waiting for a ward bed, 178 patients entered the analysis, of which data of 87 was fully analyzed. There were 110 patients with favourable disease course, of which 36 were among admitted patients. Initial CRP was significantly higher in patients with unfavourable outcome: median 297.9 vs. 134.7;  $P < 0.001$ . Change in CRP did not differ between two subgroups of patients. Initial PCT values were significantly higher in patients with unfavourable course: median 1.08 vs. 0.13  $\mu\text{g/L}$ ,  $P < 0.001$ . Change in PCT also differed significantly between patients with favourable and those with unfavourable course: median -0.02 vs. 0.34  $\mu\text{g/L}$  respectively;  $P = 0.027$ . If a combined criterion for admission: