

# SYMPTOMS AND THE ROLE OF NURSING CARE IN CARING FOR A CHILD WITH ROTAVIRUS DIARRHEA\*

## WYSTĘPUJĄCE OBJAWY I ROLA OPIEKI PIELĘGNIARSKIEJ NAD DZIECKIEM Z BIEGUNKĄ O ETIOLOGII ROTAWIRUSOWEJ

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**A** – przygotowanie projektu badania | study design, **B** – zbieranie danych | data collection, **C** – analiza statystyczna | statistical analysis, **D** – interpretacja danych | data interpretation, **E** – przygotowanie maszynopisu | manuscript preparation, **F** – opracowanie piśmiennictwa | literature search, **G** – pozyskanie funduszy | funds collection

### SUMMARY

**Background:** The rotavirus is transmitted through the fecal-oral route and through inhalation during a contact with an infected person. Especially children up to 5 years old are exposed to the infection. Some of the prophylactic measures are vaccination and adherence to the rules of hygiene.

**Aim of the study:** Presentation of frequency of symptoms occurring in rotavirus infection and the activity of the nursing staff in the care of a hospitalized child with rotavirus diarrhea.

**Material and methods:** The survey covered 32 children hospitalized at the Gastroenterology Department of John Paul II Upper Silesian Child Health Centre in Katowice. The examination technique was an own observation sheet.

**Results:** 66% (21) of the hospitalized children experienced vomiting; 34% (10) of the patients experienced raised temperature. Stomachaches occurred in 34% (10) of cases. 34% (10) children experienced apathy. Upper respiratory tract infection was diagnosed in 38% (12) of the children.

**Conclusions:** The most frequent ailments affecting children with rotavirus infections are: diarrhea, vomiting, fever, stomach aches and apathy, which require holistic nursing care in every aspect of a child's hospital stay.

**KEYWORDS:** rotaviruses, children, hospitalization, nursing care

### STRESZCZENIE

**Wstęp:** Rotawirus jest przenoszony drogą fekalno-oralną oraz kropelkową podczas bliskiego kontaktu z osobą zakażoną. Wirusem najczęściej zostają zakażone dzieci do 5. roku życia. Do działań profilaktycznych należą przestrzeganie zasad higieny, a także szczepienia.

**Cel pracy:** Przedstawienie częstotliwości występujących objawów zakażenia rotawirusem oraz działań personelu pielęgniarskiego w opiece nad dzieckiem hospitalizowanym z biegunką o etiologii rotawirusowej.

**Materiał i metody:** Badaniem zostało objętych 32 dzieci hospitalizowanych na Oddziale Gastroenterologicznym Górnośląskiego Centrum Zdrowia Dziecka im. Jana Pawła II w Katowicach. Technika badania był autorski arkusz obserwacyjny.

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**Wyniki:** U 66% (21) hospitalizowanych dzieci wystąpiły wymioty; 34% (10) pacjentów miało podwyższoną temperaturę ciała, a u 34% (10) dzieci występowały bóle brzucha. U 34% (10) pacjentów wystąpiła apatia. Zakażenie górnych dróg oddechowych zostało zdiagnozowane u 38% (12) dzieci.

**Wnioski:** Najczęstszymi dolegliwościami u dzieci z zakażeniem rotawirusowym są: biegunka, wymioty, gorączka, bóle brzucha i apatia, co wymaga holistycznej opieki pielęgniarstwa w każdym aspekcie pobytu dziecka w szpitalu.

**SŁOWA KLUCZOWE:** rotawirusy, dzieci, hospitalizacja, opieka pielęgniarstwa

## BACKGROUND

Rotavirus (HRV – *Human Rota Virus*) was first detected by Ruth Bishop in 1973. Thanks to its triple layer coat the virus is very resilient and can survive in adverse conditions (on hands, in the sheets, on surfaces of furniture and other objects of everyday use). Furthermore, it is very contagious. Passing the virus to another person is possible even several weeks after the diarrhoea has subsided [1].

The viruses are transmitted through the faecal-oral route during close contact with an infected person or with environment contaminated with the rotavirus [2]. The virus can also be transmitted through inhalation, due to concomitance of upper-respiratory tract infections and fast transmission of the disease, and contact with contaminated objects, e.g. clothes [3]. The infection can occur by using one bathroom, toilet, bed, medical equipment (thermometers, scale, etc.). Other potential sources of infection are hospital waiting rooms, no control of secretions and excretions [4].

Due to the fast growth and resilience of the virus, the transmission of the infection occurs quickly and results in a number of onerous symptoms starting with light, short-term, watery instance of diarrhoea through moderate to a heavy instance with concomitant symptoms, and seldom containing blood, mucous or pus. The stool is usually profuse, watery, mucous, green-yellowish [5–6]; persistent vomiting can occur [5]; the diarrhoea is accompanied by fever which can reach 40°C, but more frequently is between 37.9–39°C [5–6]. Between 20 and 40% of patients present with upper respiratory tract infections (rhinitis, throat inflammation, middle ear infection) [7] and stomach aches [6]. 30% of infants show symptoms connected with the central nervous system – irritability, apathy, convulsions usually caused by fever. 10% of children infected with the rotavirus are also infected with *Escherichia Coli*, *Salmonella* or *Shigella* [7].

The incidence of rotavirus diarrhoea depends on the season and is concurrent with upper respiratory tract infections. The two seasons with the highest incidence are spring and autumn [8]. The infections occur the most frequently in younger children, up to 5 years old, as a result of spending time in large groups (nurseries, kindergarten) and not paying attention to hygiene (sucking on fingers, putting toys in mouth, not washing hands) [9].

The prophylaxis in the case of rotavirus is based on maintaining proper hygiene. Frequently washing hands, using own cutlery and towels are the basic hygienic requirements during illness. Breastfeeding is as

especially important part of prophylaxis and prevention, as mother's milk contains antibodies which neutralise the rotavirus [10].

## AIM OF THE STUDY

The aim of this study was presenting the frequency of symptoms of rotavirus infection and the activities of nursing staff caring for a child hospitalised with rotavirus diarrhoea.

## MATERIAL AND METHODS

The study population consisted of 32 children with rotavirus diarrhoea, treated between January and February 2013 on the Gastroenterological Ward at John Paul II Upper Silesian Child Health Centre.

The study was approved by the director of the facility. We prepared an observation sheet for each child, containing personal data, diagnosis, history and results of physical examinations and additional examinations, to be used in the analysis of the results and nursing care. Moreover, the observation sheets included information on treatment and recommendations received upon discharge.

We analysed the following medical documentation: medical history, diagnostic charts with recommendations by physicians, nursing care charts, 24-hour patient charts.

The analysis was performed using MS Excel.

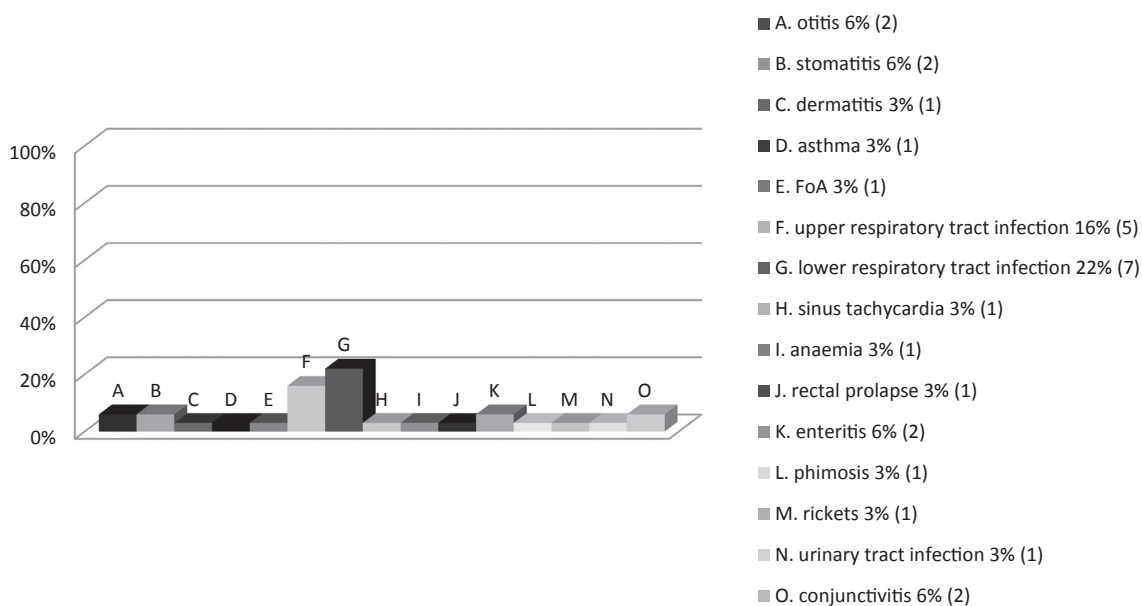
## RESULTS

All children from the study group, selected based on the results of the examination and microbiological test of the stool, were diagnosed with rotavirus diarrhoea.

The study group consisted of 32 children, 17 boys (53%) and 15 girls (47%). The biggest group consisted of hospitalised children between 1 and 3 years old (16–50%). 34% (11) children were under 1 year old and the smallest group consisted of patients over 3 years old – 16% (5). The duration of hospitalisation was similar in most cases. 26 patients (81%) were hospitalised between 1 and 6 days, 5 (16%) between 7 and 14 days, and only one (3%) over 14 days.

In 66% (21) of the patients the diarrhoea was accompanied by vomiting. 34% (10) of the patients additionally experienced fever, 34% (10) stomach ache, 34% (10) experienced a symptom connected with the central nervous system – apathy.

Apart from these most frequent symptoms, we observed a number of concomitant conditions. The most common was upper respiratory tract infection, diagnosed in 38% (12) of the patients (Figure 1).



Source: Own elaboration.

**Figure 1.** The percentage of conditions concomitant to the rotavirus infection among the study population

### Need for nursing care

The analysis of the collected material shows that nurses had to perform the following activities for all patients: preparing the hospital bed, familiarizing the parents with the ward, observing the behaviour, consciousness and vitality of the child, measuring and monitoring the patients' basic parameters and BMI, observing the gastrointestinal symptoms, opening and maintaining the patient's file and being in charge of the nursing process, maintaining a fever chart, taking blood, urine and stool samples for laboratory testing, taking the patient to examinations and procedure rooms, providing proper hydration and nutrition, monitoring the amount and quality of stool, minding the rules of hygiene and infection prophylaxis, providing emotional support to the patient's parents and providing the parents with relevant pro-health education.

that the incidence rate for rotavirus diarrhoea between 2005 and 2008 increased from 26.2/100,000 in 2005 to 62.1/100,000 in 2008. According to the estimated data, 172,000 children under 5 years old require outpatient care, 21,500 require hospitalisation and 13 die [11]. According to international European studies, rotavirus infections are the cause of 27.8 – 52% of all acute diarrhoea cases and the cause of 2/3 hospitalisations and consultations in emergency rooms and 1/3 of visits in outpatient clinics. 90% of cases occur between the 3<sup>rd</sup> and 36<sup>th</sup> month of life, with the peak, constituting 80%, between 5<sup>th</sup> and 6<sup>th</sup>, and 21<sup>st</sup> and 23<sup>rd</sup> month of life. Higher incidence rates are recorded in countries with high standards of living and in urban environment [3].

In a publication by Perl and Goldman on children suffering from rotavirus diarrhoea, the mean age was close to that of the patients from the study group

**Table 1.** The need for nursing care for children with rotavirus diarrhoea

Need for nursing care	Incidence
Observing the symptoms connected with the central nervous system	<b>47% (15)</b>
Observing the symptoms connected with the circulatory system	<b>3% (1)</b>
Observing the symptoms connected with the respiratory system	<b>31% (10)</b>
Controlling the amount and texture of the vomit	<b>68% (22)</b>
Preventing aspiration during vomiting	<b>68% (22)</b>
Preventing complications and rising body temperature	<b>34% (11)</b>
Observing and caring for the patients buttocks and crotch	<b>3% (1)</b>
Preparing the patient for diagnostic tests	<b>44% (14)</b>
Caring for the oral cavity	<b>16% (5)</b>

Source: Own elaboration.

### DISCUSSION

The studies conducted by the National Institute of Public Health – National Institute of Hygiene show

[12]. Increased incidence rate for rotavirus infection was documented for boys (53% – 17 subjects), similarly as in a Poznań study (46% – 53 subjects) [13].

According to the available sources, similarly as in the present study, rotavirus diarrhoea was the most common among children between 6 months and 3 years old [13]. Furthermore, the duration of hospitalisation documented in the present study was similar to the results of different European studies [13–14].

According to the results of studies conducted in Basel and hospitals in Israel, the cases of vomiting were between 50% and 92% [12, 14]. Another frequent symptom was fever, which was documented with lower incidence rate (43%) in a study similar to ours (66% – 21 subjects) [13]. Other symptoms, such as stomach ache and apathy were also recorded in other studies [12–13]. For children, a typical complication of gastroenteritis are upper respiratory tract infections. In a study by Modlińska-Cwalińska et al., 8% of the children from the study population were diagnosed with pneumonia [13].

There are no available sources on providing nursing care to a child with Human Rota Virus infection, therefore we cannot perform a comparison with the results of the present study. The only available sources are handbooks on paediatric nursing, which do not take into consideration the specifics of different wards.

## CONCLUSIONS

1. In the study population the most frequently reported ailments were: diarrhoea, vomiting, fever, stomach aches and apathy (lassitude).

2. The most common activities of nurses providing care to children with rotavirus infection were: taking medical history, taking vital parameters of the patient, carrying out dispositions from physicians, adhering to rules of infection prophylaxis and educating the patient, their parents and guardians on healthy lifestyle.

3. Holistic nursing care should be adapted to the age, sex, concomitant diseases and emotional maturity of the patient and their parents.

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