CLINICAL CHARACTERISTICS OF ROTAVIRUSES DISEASE

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ABSTRACT

Rotaviruses are the major causes of viral gastroenteritis in infant and the young children. There are a wide spectrum of clinical signs and symptoms of rotavirosis. Rotavirus infection is fecal-oral infection. Rotaviruses prove with Latex agglutination test and electron microscopy.

In a four year period 943 stool samples out of 527 hospitalized patients had been analyzed. A presence of rotavirus is proved with a LA and EM tests at 170 (32,2%) patients age 0-7 years, in their stool samples. Analyzing age groups of these patients, it was found that the rotaviruses infection the most frequently occurred at age group from 7-24 months. From 170 positive patients, 122 or 71,8% were in this age group.

At all patients was found diarrhea, vomiting in a 90,5% cases. Mild fever had 65,5% patients, signs of a respiratory infection appeared at 60,7% patients, abdominal pain at 13,3% patients. Severe dehydration had 49,9% patients and metabolic acidosis had 79,2% cases. Macroscopically blood in stool had 6,4% patients, slime in a stool 46,0% patients was found, and aholic stool had 8,4% patients.

In all hospitalized patients disease lasted in average 12,6 days, and the hospitalization in average 10,2 days. None of the patient had any kind of complication, all of them very successfully cured.

These results confirm that rotaviruses are important health problem among infant and the young children in Bosnia and Herzegovina.

Keywords: clinical, rotavirus, etiological, gastroenteritis, age groups, diarrhea.

INTRODUCTION

Since 1973, when rotavirus was discovered, it is established that they frequently cause diarrhea - acute infection of the gastro-intestinal tract at newborn infants and younger children (1). Children that are 7 - 24 months old most frequently suffer from this illness. The illness occurs sporadically or epidemically in children groups. In etiology of the diarrhea syndrome, rotaviruses are carriers in 30-40% of cases among the children of pre-school age. Rotavirus infections among adults and immune-competent persons do not represent a significant medical problem, unlike infections among the elderly and immune-deficient patients, which have more difficult course and form of illness (2). Nishimura and co-workers (3) described in 1993 the first appearance of convulsions in rotavirus gastro-enteritis and some researchers describe changes in liver as a consequence of the rotavirus infection. Rotavirus infection occurs through faeces and oral way, through contaminated food, water and objects that are commonly used by many people.

Diarrhoea, vomiting, increase of intestine motility and other clinical symptoms of acute gastro-enteritis are a consequence of morphological and functional damages of small intestine mucous membrane cells and uvulas to which the rotaviruses show tropism. The effect of rotaviruses on those structures can be similar to the effect of the bacteria entero-toxins (4).

Gravity of the clinical condition of the patient depends on his age, condition of his immune system, immunity, potential joint infections and the virulence of rotaviruses. The purpose of this work is to present the participation of rotavirus infections in diarrhea syndrome disease among the pre-school children as well as a review of clinical situation and the outcome of the illness.

MATERIAL AND METHODS

527 patients with diarrhea syndrome have been hospitalized at the Clinic of Infectious Diseases in Sarajevo between 1988 and the end of 1991. Bacteriological, parasitological and virusological laboratory examinations of bowel movement have been conducted at the Institute of Microbiology in Sarajevo. Rotaviruses in the samples of examined bowel movements have been detected or diagnosed by electronic microscopy (EM) and Latex agglutination method (LA-Rotalex, Orion diagnostica). Microbiological examination of bowel movements of all patients has been performed before the therapy, i.e. before their admittance into the Clinic, during the hospitalization and the illness outcome during the discharge from the Clinic.

Clinical symptoms of the illness have been analyzed on the basis of data from the history of illness, symptom

Age hospitalized (patient group)	Patient	% of cases	Number of positive	% of cases
0-6 months	98	18,6	20	11,8
7-24 months	245	46,5	122	71,8
3-4 years	114	21,6	26	15,3
5-7 years	70	13,3	2	1,1
Total:	**527**	100,0	**170 (32,2%)**	100,0

Table 1. Analysis of the number of bowel movements of all patients and the number of positive findings with rotaviruses per age and proportionate appearance.

evolution during the hospitalization and the outcome of the illness during the discharge from the Clinic.

RESULTS

943 samples of bowel movements have been taken from 527 hospitalized patients for bacteriological, parasitological and virusological examination. The number of samples taken from each patient at the time of admittance and during the hospitalization depended on the length of diarrhoea's duration. Samples of bowel movements of the patients with confirmed findings of rotavirus in their bowel movements have been taken for further analysis.

Out of 527 hospitalized patients with diarrhoea and other clinical symptoms, 32,3% (1/3) of them had positive findings of rotaviruses in their bowel movements.

Age structure of all analyzed patients shows that the greatest number of hospitalized and examined patients were between 7 and 24 months old (46,5%) where the greatest number of rotavirus positive findings was found (71,8%). 21,6% of patients that were 3-4 years of age were hospitalized and there was 15,3% of proved rotavirus infection in their bowel movement samples. At the third place, there are children 0-6 moths old (infants) with 18,6% of hospitalized patients and 11,8% of positive findings. The table evidently leads to conclusion that rotaviruses endanger patients that are 7 months to 4 years old and that is, knowing the hygiene and epidemic situation in our territory, understandable. Infants (0-6 months old) could have been infected during the act of breast-feeding and supplementary feeding, while the children between 7 months and 4 years of age have an opportunity to become infected by contact. The table shows that in the 5-7 years of age group we find 13,3%, out of the total number of those who were hospitalized, and the portion of rotavirus positive findings only 1,1%.

Diarrhea is the leading symptom in all hospitalized patients with positive rotavirus findings in their bowel movements. It was present in all hospitalized patients. By their consistence, the bowel movements were liquid, mucous and mushy. The mucus in bowel movements occurred in 46% of patients, while 8,4% of patients had acholic bowel movements. Blood in bowel movements appeared in 6,4% cases. Within 24 hours, the number of bowel movements per a patient was between 2-10 and in some cases innumerably. Variations in diarrhea durations were between 2-20 days, with an average of 5,7 days.

Another dominant clinical symptom is vomiting, registered in 90,5% of patients. Variations of the number of vomiting acts were between one, 5-6 times and innumerably during 24 hours.

Stomach ache could be found only with the children only after feeling their abdomen or after their own statement. It was registered in 13,3% of cases.

High temperature, over 37,2° C, was found in 65,6% of patients, with average duration of 2,1 days.

Also, respiratory symptoms were registered in 60,7% of patients, with average duration of 5,7 days.

Dehydration was noted in 49,4% of patients and metabolic acidosis in 79,2% of cases.

Duration of illness lasted between 4 and 31 days, with an average of 12,6 days, while duration of hospitalization lasted between 3 and 30 days, with an average of 10,2 days.

In cases of registered joint rotavirus infections with bacteria, fungus or parasites, the clinical record became more difficult. Average duration of illness was 17,3 days with average hospitalization duration of 15,0 days.

No lethal cases have been registered in the patients with rotavirus infection.

DISCUSSION

On the basis of the stated cases, it can be concluded that rotavirus infections, among the pre-school children, have a very important place in causing the acute gastro-enteritis.

It occurred in all 1/3 patients with the clinical diagnose of acute gastro-enteritis. Rotavirus infections mostly appear at the age of 7-24 months. This disease has its skylic symptoms which are not characteristic only for this infectious agent.

Since the four-year long researches for the Sarajevo region have been analyzed, we can conclude that the illness has no epidemic character and it occurs sporadically during the whole year. We can not talk exactly about some season illness. Researchers like Glass et al. (5), Jin et al. (6) conclude that the rotavirus infections occur sea-

sonally in the form of minor epidemics, independently or jointly with other infectious agents, which is not the case with our research. Respiratory symptoms occurred with half of our patients. Those findings are similar to finding of Gendrel et al in Paris (7). Uhnoo et al. (8) described their findings that are similar to our research, stating as a possibility that this disease appears as an independent clinical entity, which is broadly accepted today.

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