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NEW VIEWS ON CLINICAL AND LABORATORY ASPECTS OF ROTAVIRUS INFECTION

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Abstract
Rotavirus infection is caused by an RNA virus having 5 serogroups (A-E) with a much larger number of serotypes. It is transmitted by the contact route. Causes watery diarrhea, often with vomiting and fever, secondary to lactase deficiency.

Keywords: Diarrhea, anthroponotic viral acute infectious, fecal-oral transmission mechanism.

Introduction

Definition - anthroponotic viral acute infectious disease with fecal-oral transmission mechanism. Characterized by predominant lesions of the digestive tract, general intoxication, dehydration. Food poisoning the causative agent is an RNA-containing virus from the family Reoviridae of the genus Rotavirus. The name is derived from the Latin rota - wheel, as the virus particles under the electron microscope look like small wheels with a wide “hub”, 20 short “spokes” and a circular rim. Contains hemagglutinins. Using RSC, rotaviruses are separated into two antigenic variants. With the help of neutralization reaction - by 4 (and possibly more). Rotaviruses are resistant at acidic pH values to fat solvents; they remain viable on various environmental objects from 10-15 days to 1 month (depending on temperature and humidity), in feces - up to 7 months. Rotaviruses have two protein shells - outer and inner capsids. The core contains internal proteins and genetic material represented by double-stranded fragmented RNA. The genome of human and animal rotaviruses consists of 11 fragments that can be separated by electrophoresis in polyacrylamide gel (PAAG) or agarose. Four antigens have been found in rotaviruses; the main one is the group-specific antigen due to the protein of the internal capsid. Taking into account group-specific antigens, all rotaviruses are divided into five groups: A, B, C, D, E.

Rotaviruses of the same group have a common group antigen, which is detected by immunologic reactions: enzyme immunoassay, immunofluorescence, immune electron microscopy, etc. Most

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human and animal rotaviruses belong to group A. Reservoir and sources of the pathogen: human, sick or carrier. Cross-antigenic relationships have been found between human, monkey, and calf rotaviruses, but the epidemiologic significance of animal viruses has not been established. Rotaviruses are found in the water of rivers, lakes, seas, and groundwater. The source of infection in rotavirus gastroenteritis is an infected person - a patient with a manifest form of the disease or asymptomatically excreting rotaviruses with feces The most frequent source of the disease for children of the first year of life are mothers infected with rotavirus; for adults and older children - children, mainly from children's collectives. The possibility of human infection from animals has not been proven.

The most frequent source of disease for children of the first year of life is rotavirus-infected mothers; for adults and older children - children, mainly from children's groups. The possibility of human infection from animals has not been proven. Period of contagiousness of the source. During the first 5 days of the disease in 1 g of feces of patients contains up to 109 - 1011 viral particles, during the next 6-10 days the excretion of the virus with feces sharply decreases as the stool normalizes. In some patients, the period of virus excretion may last up to 20-30 days. Persons without clinical manifestations of the disease may excrete rotaviruses for several months or more. The mechanism of transmission of the pathogen is fecal-oral; routes of transmission are water, food, and household. The possibility of airborne or airborne-dust transmission is suspected. The natural susceptibility of people is high, although mostly young children fall ill. Up to 90% of examined children of 2-3 years of age have specific antibodies to rotaviruses. The main epidemiologic features. The nature of the spread of the disease is ubiquitous with predominance in developing countries, where it accounts for about half of all cases of intestinal disorders. Rotavirus infection ranks second after acute respiratory viral infections in terms of disease frequency. The disease mainly affects children under the age of 1 year, less often - up to 6 years; in adult contingents, the disease occurs in isolated cases. According to WHO, from this infection in the world annually die from 1 to 3 million children. Diseases are registered throughout the year, but more than 70% of patients are detected in the winter-spring period. High focality in organized children's preschool groups is characteristic.

Rotaviruses are also known as one of the main etiologic agents in hospital outbreaks of gastroenteritis in maternity hospitals and pediatric medical hospitals of various profiles. Main clinical features: acute onset; characterized by abundant watery stools with a pungent odor, without mucus and blood; vomiting is noted in half of patients. Simultaneous upper respiratory tract involvement (rhinitis, rhinopharyngitis, pharyngitis) is characteristic. Lethality usually does not exceed 4%. Laboratory diagnosis is based on the detection of virus in feces in the 1st week of the disease (electron and immunoelectron microscopy, as well as the method of infection of cell cultures), specific antibodies and the increase of their titer in the blood serum of patients and reconvalescents using PH, RTGA and RSC. The first serum is tested in the first 3-4 days of the disease, the second - 2 weeks after the disease and later.

Dispensary observation of the person who has contracted the disease. Children attending pre-school child care facilities after the disease are subject to clinical observation for one month with daily stool examination. Children who continue to isolate rotaviruses (antigen) after discharge from the hospital are subject to a one-month single laboratory examination by serologic methods

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2-3 weeks after discharge. The necessity of laboratory examination of the rest of the infected children for the presence of rotaviruses (antigen) in feces is determined by the pediatrician (at the appearance of clinical symptoms of the disease) and epidemiologist (taking into account the specific epidemiological situation). Employees of food enterprises and persons equated to them, who have undergone rotavirus infection and continue to excrete rotaviruses with feces, are subject to dispensary observation within one month after clinical recovery. In the absence of clinical symptoms of the disease or complications at the end of the observation period, a single virological (serologic) examination for the presence of rotaviruses (antigen) is performed.

Repeated laboratory examination of persons excreting rotaviruses (antigen) with feces. Conducted at intervals of 5-7 days by appointment of an infectious disease specialist and epidemiologist. Reconvalescents - workers of the above enterprises, discharged from the hospital (or after treatment at home) with negative results of laboratory examination are subject to clinical observation within one month. Laboratory examination (determination of AG in feces, AT (ELISA, RSK)) is prescribed according to clinical indications.

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