Rotavirus enteritis

Rotavirus enteritis is an acute infectious diarrheal disease of viral etiology , it is the most common cause of infant diarrhea . It is transmitted by the fecal-oral route. The infectious dose needed to cause symptoms is very low, so the disease often occurs in epidemics. Rotavirus (gastro) enteritis often causes dehydration requiring treatment during hospitalization. In developed countries, the disease usually has a good prognosis, in developing countries it is a common cause of infant death. Children aged 4 months to 3 years at the first rotavirus infection have the highest risk for severe rotavirus (gastro) enteritis with significant dehydration. There is voluntary vaccination against rotavirus infectionsintended for children from 6 weeks to 8 months, it is a live vaccine (Rotarix, Rotateq), which is administered orally in 2, resp. 3 doses. Rotavirus vaccination is not intended for adults.

Epidemiology

Rotaviruses are the most common causes of nosocomial gastroenteritis in crèches and infants, where they occur sporadically and epidemiologically. In neonates and infants up to 2 months of age, rotavirus enteritis is rare and in most cases is asymptomatic. The disease can also occur in symptomatic form in adults, most often parents of affected children.

The virus is present in the stool 7-10 days after infection, especially in the first 4 days it is present in high concentration. Transmission most often takes place via the faecal oral route through close personal contact. Although airborne transmission has been repeatedly considered, the respiratory pathogenicity of the virus has not been demonstrated. During primary infection, only 10 rotavirus particles are sufficient to cause symptoms of the disease. The maximum occurrence is in winter and in the first spring months.

Etiology

The genus Rotavirus belongs to the family *Reoviridae* . The existence of at least 42 different G / P strains with different serotype combinations is estimated. Their representation varies by geographical area and over time. Rotaviruses are resistant to environmental influences, survive on objects, hands and are resistant to many disinfectants. The mature virus particle has no outer envelope and the virion has a diameter of 65-70 nm. Animal species of rotavirus do not usually directly cause disease in humans, but are a potential reservoir for recombination with human viruses.

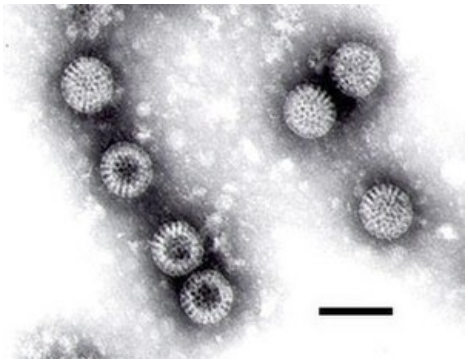
Pathogenesis

Rotaviruses are invasive pathogens that attack mature epithelial cells of villi apexes in the upper two-thirds of the small intestine (in the duodenum and proximal jejunum). Epithelial cells are lysed, reducing sugar absorption. Unabsorbed disaccharides and fission products increase the osmolality in the intestinal lumen, which accelerates peristalsis and dilates the intestine. Complete recovery of the intestinal mucosa takes 2-8 weeks.

Rotaviruses produce the enterotoxin NSP4, which immobilizes ionized calcium in cells and thus induces the transfer of salt ions across the plasma membrane, transepithelial chloride secretion, and cyclic nucleotide-independent fluid secretion with the development of secretory diarrhea.

Clinical Picture

- The course is different - asymptomatic, mild or severe;
- short incubation period (1-3 days);
- often begins atypically as HCD catarrh, then loss of appetite, fever , vomiting and diarrhea , flatulence ;
- stools frequent, bulky, watery, without mucus or blood;
- skin rash , most often of a rubella form, may be present ;
- the whole disease usually lasts 5-8 days ;
- in those affected, lactase deficiency occurs (after 10-14 days).



Complications

- Dehydration with electrolyte imbalance, extrarenal renal impairment, etc .;
- malabsorption syndrome with prolonged diarrhea, which requires a lactose-free diet.

Diagnostics

- History, epidemiological situation;
- Demonstration of rotaviruses or their antigens in the native stool - immunochromatographic or latex

agglutination methods are routinely used, which detect rotavirus antigens in the native stool sample, ev. ELISA ;
- less available methods: direct electron microscopy (high sensitivity), PCR , culture.

Therapy

- Rehydration , adjustment of mineral metabolism and correction of acidosis;
  - oral: WHO solutions , Kulíšek ;
  - intravenous rehydration;
  - in breast-fed infants, do not interrupt breast-feeding and administer rehydration solution between breast-feeding;
- early realimation (bananas, grated apples, mashed potatoes, rice soups, chicken broth, rice with meat);
- probiotics (*Saccharomyces boulardii*);
- intestinal adsorbence (diosmectite);
- antipyretics ;
- event. antiemetics (ondansetron).

Forecast

The prognosis for children in developed countries is in most cases good. The most serious complication, which can end in lethal, is extrarenal uremia with insufficient fluid intake and significant fluid loss, and hypovolemic shock with excessive fluid and mineral loss.

Prevention

Vaccinations - 2 vaccines are registered in the European Union: *RotaTeq* and *Rotarix* . These are live vaccines for oral use in the first months of life. Widespread vaccination has been introduced, for example, in Austria, Belgium, Luxembourg, Finland and Poland.

Prevention of hospital infections : thorough disinfection of staff hands with virucidal solutions containing alcohol, thorough decontamination of objects, disposable aids, minimizing the length of the child's stay in the hospital.

Links

References

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3. ↑ PAZDIORA, P and J TÁBORSKÁ. *Diarrheal diseases caused by rotaviruses.* 1st edition. Grada Publishing as, 2004. p. 144.

Source

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