

NOTES
REOVIRUSES

MICROBE OVERVIEW

- *Rotavirus*: most important *Reovirus* in clinical practice

Genetic Material
- RNA viruses with segmented double stranded linear RNA

Morphology
- Encapsulated (icosahedral capsid)
- Nonenveloped

Replication/multiplication
- Replicates in cytoplasm

ROTAVIRUS

osms.it/rotavirus

PATHOLOGY & CAUSES

- A major cause of acute diarrhea, especially in children
  - Most important cause of severe gastroenteritis in infants, young children worldwide
- Short incubation period
  - ↓ activity of brush-border enzymes (such as maltase, lactase) → malabsorption of nutrients → presence of reducing substances in stools → osmotic diarrhea
  - Direct effects of enterotoxin non-structural protein 4 (NSP4) on gastrointestinal mucosa (apoptosis of enterocytes)
  - Activation of enteric nervous system → ↓ absorption of Na^+, loss of K^+

CAUSES

- Transmission by fecal-oral route (ingestion of water/food contaminated by stools)
  - Spreads easily; minimal infective dose (10 viral particles)

RISK FACTORS

- Age
  - Usually affects children between 6–24 months of age
- Cooler months in temperate climates
- Hospitalization, long term care facilities, day care centers, kindergartens, college dormitories
- Immunodeficiency
- Non-immunized status

COMPLICATIONS

- Secondary lactase deficiency
- Severe dehydration
  - Shock, multisystem failure
- Central nervous system complications
  - Seizures, encephalopathy
- Persistent gastroparesis, diarrhea
- Necrotizing enterocolitis
- Intussusception
- Biliary atresia
- Can be fatal

SIGNS & SYMPTOMS

- *Average duration:* 8 days
- *Children:* watery diarrhea, vomiting, fever
- *Adults:* less severe symptoms

DIAGNOSIS

LAB RESULTS

Blood tests

- ↑ blood urea nitrogen (BUN)
- Hyperchloremic acidosis
- ↓ serum calcium

Stool analysis

- Immune based assays
  - Enzyme linked immunosorbent assay (ELISA), latex agglutination tests (best diagnostic tests); PCR, culture

TREATMENT

OTHER INTERVENTIONS

- Most cases are self-limited, do not require pharmacotherapy
  - Antidiarrheal medications not recommended (they delay elimination of infectious agent from intestines)
- ↑ fluid intake; oral rehydration solutions
- Good nutrition
- If infection is severe
  - Hospitalization for IV fluids

Prevention

- Live attenuated vaccine is indicated routinely for all infants, except for those with history of intussusception/severe combined immunodeficiency (SCID)