History

The boy is a 2-year-old girl with a chief complaint of persistent vomiting for the past 2 days and fever for 1 day. She has a history of no significant past medical history and no family history of similar symptoms.

Physical examination

VS: T 39.5°C, P 120/min, BP 80/60 mmHg, R 30/min.
BC: W 12.2 g/dL [F29±11], WBC 10,000 cells/μL, Hb 10 g/dL.

Initial diagnosis

Vomiting due to gastroenteritis without any other specific symptoms.

Differential diagnosis (symptomatic diagnosis)

1. Infection with toxigenic organisms (E. coli, V. cholerae, Salmonella, etc.)
2. Hormonal diarrhea
3. Drug-induced
4. Life-threatening conditions
5. Congenital electrolyte defects (Rola, OI)
6. Hormonal secreting tumors (VIPoma)

Further investigations

Hemoglobin and electrolytes - positive
Stool concentration for parasite - negative
C. diff. test stool - negative
Stool for ova and parasites - negative
PPD skin test - negative
Thyroid function test - normal
Serum IgA 106.8, IgM 16.8, IgG 72.1, IgE 16.8

Specific tests

Stool electrolytes: Na 120 mEq/L, K 56.6 mEq/L, Cl 86 mEq/L
Urine VMA 4.1 mg/dL

Immunohistological study of colonoscopy up to the descending colon:
- no specific abnormality: Electron microscopy - no evidence of microvillus inclusion disease.
- normal pathologic examination

Final diagnosis

Cholera toxin - (AMP and Ca)

ETEC - (AMP and Ca)

- inhibit Na+ and CHOO exchange at the luminal site of villous enterocytes
- stimulate chloride channel at the enterocytes

Closone and malachite green sulfitone - (SO3 and Ca)

Copper - increased production of NO in the colon

Clinical application of GI electrolytes transports and pathogenesis of chronic diarrhea in infants and children

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