INFANTILE DIARRHEA

General Introduction

Diarrheal diseases are the most frequently occurring illness in childhood in the developing countries and are the second frequently in our China (only lower than respiratory diseases) 5 million childhood are die from diarrheal diseases every year Incidence :201,46%

Susceptible agents

The characteristic of the alimentary system The features of growth and development The weakness of the defense function of the body Alteration of intestinal flora Artificial feeding

Etiology

Infective agents 1.Viral infection. accunts for 80% Rotavirus (HRV) Calicivirus and Astrovirus Enterovirus Coxsackievirus ECHO virus Anteric Adenovirus Norwalk virus Coronavirus

2. Bacterial infection Escherichia. Coli Enteropathogenic E. coli, EPEC Enterotoxigenic E. coli, ETEC Enteroinvasiv E. coli, EIEC Enterohemorrhagic E. coli, EGEC Enteroadherent-aggregative E. coli, EAEC Campylobacter jejuni Yersinia

Others Salmonella Aeromonas hydrophila Clostridium. difficile Stap hylococus aureus bacillus pyoeyaneus bacillus proteus

d3.Mycotic infection Candida albicans 4.Patasitization Giardia Cambia Amebae Cryptosporidium AAD

Non-infective agents Food diarrhea Climatic factor Others Allergic diarrhea

Pathogenesis

1. Infective diarrhea (1) Viral infective enteritis (2) Bacterial infective enteritis Toxigenic enteritis Invasive enteritis 2. Non-infective diarrhea

Viral infective enteritis The offending virus invade the epithelial cells of intestine villi destroy Disaccharidase Carrier Area of absorption Absorption of Absorption of Absorption of Disaccharide Glucose and Na+ carbohydrate and lipid Osmotic pressure Watery diarrhea

Toxigenic enteritis Enterotoxigenic E.col Invades and reproduction Enterotoxin Heat labile enterotoxin Heat stable enterotoxin Adenylate cyclase Guanylate cyclase ATP cAMP GTP cGMP Absorption of Na+, Cl−, Water Secreation of Cl- Watery Diarrhea

Clinical manifestation

(N).Acute diarrhea 1.General characters of diarrhea (1).Mild type:Gastrointestinal manifestation (2).Severe type:Disturbance of fluid,electrolyte, and acid-base balance, General toxic symptoms.

Gastrointestinal manifestation Anorexia Vomiting Diarrhea Abdominal pain

The Disturbance of fluid,electrolyte, and acid-base balance Dehydration Metabodic acidosis Hypokalemia Hypocalcaemia Hypomagnesal Hypophosphatemia

Dehydration Degree Mild: 3-5%(30-50ml/kg) Moderate:5-10%(50-100ml/kg) Severe: >10%(100-120ml/kg)

Quality Isotonic: Na+ 130–150 mmol/L Hypotonic: Na+ <130 mmol/L Hypertonic: Na+ >150 mmol/L

2 Differential diagnosis of quality of dehydration

Metabolic acidosis Pathogenic factors Clinical manifestations Mild : [HCO3−] 18–13mmol/L Moderate : [HCO3−] 13–9mmol/L Severe : [HCO3−] <9mmol/L

Hypokalemia (K+<3.5mmol/L) Pathogenic factors Clinical manifestations The neuromuscular excitability is reduced. The excitability of heart muscle is strengthened.

Hypocalcaemia Hypomagnesaemia Hypophosphatemia

8 The clinical features of several common enteritis types

11. Rotavirus enteritis 2.Norwalkvirus enteritis 3.Toxigenic colibacellus enteritis 4. Invasive colibacellus enteritis 5. Hemorrhagic colibacellus enteritis 6.Antibiotic evoked enteritis Staphylococcus aureus enteritis Pseudomembranous enterocolitis Mycotic enteritis

Prolonged and chronic diarrhea Etiology Weakness of the bacteicidal barrier of the stomach in severe malnutrition children Azymia Bactic growth in the upper intestine in severe malnutrition children Change of the dynamia of intestine Alteration of intestinal flora Cellular immunity deficiency in severe malnutrition children

Methods of Examination History taking Physical examination Laboratory diagnosis of stools Duodenal juice Biopsy of intestinal mucosa Others

Diagnosis and differential diagnosis No. or few leukocytes in stools Physiologic diarrhea Disturbance of the digestive and absorption function of the intestine Many of leukocytes in stools Bacillary dysentery Necrotic enteritis

Treatment

The principles Adjustment of the diet Prevention and improvement of the dehydration Proper drugs therapy Intensification of the nursing Prevention of the complications

1. The therapy of the acute diarrhea (1) Dietotherapy (2) Improvement of the disturbance of the fluids, electrolyte and acid-base balance

1) Oral fluid infusion Oral rehydration salts, ORS Component Sod. Chloridi 3.5g Sod. Bicarbonate 2.5g Pat Citrate 1.5g Glucose 20.0g Water 1000ml

ORS Tonicity 220 mmol/L (2/3 T) Indication Mild dehydration: 50-80ml/kg Moderate Dehydration: 80-100ml/kg

ORS Contraindication Neonatal infant Vomiting Severe dehydration Shock Heart failure Renal failure High fever Abdominal distention

2) Venous transfusion The first-day transfusion Total quantity of fluids Mild dehydration: 90-120ml/kg Moderate dehydration: 120-150ml/kg Severe dehydration: 150-180ml/kg

2) Venous transfusion The quality of fluids Isotonic dehydration: 1/2 T Hypotonic dehydration: 2/3 T Hypertonic dehydration: 1/3 T

2) Venous transfusion The transfusion rate Dilatation blood capacity phase 20ml/kg (in30-60min) Supplying the cumulative dose phase 8–10ml/kg椀 (in8-12h) Supplying the maintenance dose phase 5ml/kg椀 (in12-16h)

2) Venous transfusion Improvement of acidosis After transfusion, some patients with acidosis had corrected Severe acidosis 1.4% Sod. bicarbonate 5% Sod. bicarbonate (ml)=(−BE)   0.5 WT (kg) Sod.bicarbonate(mmol)=(22¶ CO2cp)mmol x 0.6 x WT(kg)

2) Venous transfusion Improvement of the hypokalium 10% KCL Solution 3---6mmol.kg.d (10%kcl 1¶ 3ml.kg.d) Urination in 6 hour Concentration: <0.3% The lasted time of transfusion: >6 hour(Every day) Intravenuos injection is inhibit absolutely

2) Venous transfusion Supplying calcium and magnesium 10% Calcii Gluconas 1–2ml/kg iv. drip 25% Magnesium sulfate 0.1mg/kg i. m

The conclusion of the first-day transfusion The first is fast and then slow The first is solt and then Glucose Give potassium when you see the urination Correct the acidosis if it necessary

The second-day and later transfusion Physiological requirement 1/3 –1/5 T Contining lost 1/2 –1/3 T Improvement of acidosis Improvement of hypokalium

(3) Drug therapy 1) Control of infection Macopurulent bloody stool Penicillins Sulfonamides Cephalosporins Macrolides Aminoglycosides Rifamycins Chloramyphenicols Vancomycin Quinolones

1) Control of infection Watery stool Rivazole? Microcological therapy Intestinal mucosa protector Avoid the use of antidiarrheal agent

2.Treatment about prolonged and chronic diarrhea (1) Pathogenic treatment (2)Prevention and treatment of the dehydration and improvement of the disturbance of electron and acid-base balance

(3) Aliment therapy Breast feeding Artificial feeding Sugar evoked diarrhea Allergic diarrhea Essential food Intravenous nutrition

(4) Drug therapy Antibiotics Trace element and vitamin :Acid folium Microorganism therapy and Protective agent to the enteromycosa (5)Traditional Chinese Medicine

Prevention

Rational feeding Physiologic diarrhea Health habit Climate Disinfection and isolation Prevention of aleration of intestinal flora Vaccine

Clinical manifestations of dehydration

Clinical Signs		Degree of Dehydration	
	Mild	Moderate	Severe
Decrease in body weight	3-5%	5-10%	10-15%
Skin Turgor			
Color	Normal(+/-)	Pale	Markedly decreased
Mucous membranes	Normal	Dry	Mottled or gray; parched
Hemodynamic signs Pulse	Normal	Tachycardia	Markedly decreased
Capillary refill	2-3 seconds	3-4 seconds	>4 seconds
Blood pressure	Normal	Normal	Low
Perfusion			
Fluid loss Urinary output	Mild oliguria	Oliguria	Anuria
Tears	Normal	Decreased	Absent
Urinary indices Specific gravity	>1.020		
Urine[Na+]			<20 mEq/L
Anuria			

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