DIARRHEAL DISEASES: THEIR PREVALENCE AND PATHOGENETIC MECHANISMS

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Abstract: This article discusses diarrheal diseases, their widespread prevalence worldwide, causes, and pathogenetic types. Diarrheal diseases are considered one of the major challenges for the global health system. These diseases, which claim the lives of millions of children annually, are caused by various bacteria, viruses, fungi, and protozoa. The article provides information about different pathogenetic types of diarrhea secretory, hyperosmolar, hypo/hyperkinetic, and hyperexudative forms. Additionally, the routes of infection transmission, epidemiological significance, and perspectives on prevention are analyzed.

Among all infectious diseases, acute intestinal diseases are very common. Acute intestinal diseases cause nearly 5 million child deaths worldwide each year. Despite some progress in combating acute intestinal diseases, they remain widespread and cause significant economic losses in our country. The group of acute intestinal diseases includes bacterial dysentery, salmonellosis, bacterial food poisoning (staphylococcal poisoning, botulism, etc.), amoebiasis and other protozoal intestinal diseases, as well as enteritis caused by other pathogens (pathogenic intestinal bacilli, Arizona, Citrobacter, Proteus, enteroviruses). Recently, it has also been confirmed that campylobacteria cause acute intestinal diseases. The focus is first on the localization of pathogens in the intestine and then on the uniformity of the disease transmission mechanism. Pathogens released from an infected or carrier organism naturally enter the surrounding environment (soil, water, etc.) and then enter a healthy person's body through food or drinking water. External environmental factors that facilitate the transfer of pathogens from one organism to another are called infection carriers in medicine, and the totality of these factors that spread a particular disease is called transmission routes. Depending on which factor plays a leading role in the development of the epidemiological process, intestinal infections are mainly transmitted through three routes: water, food products, and contaminated hands or household items (dishes, etc.). Additionally, flies, mosquitoes, and bees play a significant role in spreading intestinal infections during summer and autumn. Once pathogens enter a healthy person's body, they find favorable conditions in various

parts of the gastrointestinal tract for parasitism. Therefore, digestive system function is disrupted in intestinal diseases, which is the main symptom of the disease. Thus, when bacteria enter the gastrointestinal tract, a person becomes infected with acute intestinal infections.

Causes of acute intestinal infections are divided into the following groups: **Bacterial** – caused by dysentery, cholera, salmonellosis, botulism, typhoid, and others. This group also includes staphylococci, Pseudomonas aeruginosa, and other pathogens; **Viral** – mainly rotaviruses and enteroviruses, as well as coronaviruses, adenoviruses, and others. These infections are often referred to as "stomach flu"; **Fungal** – includes Candida species, opportunistic pathogens normally present in the body's microflora but causing various diseases when the immune system is weakened; **Protozoal** – includes protozoa such as Giardia, amoebae, etc.

Pathogenetic types of diarrhea syndrome: Secretory diarrhea: This type is based on increased secretion of sodium and water into the intestinal lumen. An example is cholera diarrhea. The exotoxin enters the enterocyte receptor zone and activates adenylate cyclase, which increases cyclic AMP synthesis. This, in turn, stimulates enterocytes to secrete electrolytes and water continuously (1 liter of discharge contains 5 g sodium chloride, 4 g sodium bicarbonate, and 1 g potassium chloride). Prostaglandins play a key role in stimulating cAMP synthesis. Secretory diarrhea is also observed in salmonellosis, terminal ileitis, and post-cholecystectomy syndrome. It is influenced by highly active peptides, serotonin, calcitonin, secretin, and free and chain fatty acids. The osmotic pressure in the stool mass is lower than that of water. Stool is watery and sometimes green. **Hyperosmolar diarrhea:** Occurs in malabsorption syndromes, disaccharidase deficiencies, and after taking saline laxatives. The osmotic pressure of the stool mass is higher than that of blood plasma. Stool is voluminous, watery, and contains partially digested food. **Hyper- and hypokinetic diarrhea:** Caused by impaired intestinal transit. This type involves either decreased or increased intestinal motor function and is observed with neurosis, laxative use, or antacid intake. Stool osmotic pressure matches that of blood plasma. Stool is watery, mushy, and not abundant. **Hyperexudative diarrhea:** Caused by the exudation of blood, mucus, and plasma proteins into the intestinal lumen. Occurs in intestinal inflammatory diseases (salmonellosis, dysentery), nonspecific ulcerative colitis, Crohn's disease, intestinal tuberculosis, lymphoma, carcinoma, and ischemic bowel disease. Stool osmotic pressure is higher than blood plasma, with watery stool mixed with blood and pus.

Conclusion: In summary, diarrheal diseases remain a significant public health concern globally due to their high prevalence and severe impact, especially among children. Understanding the various pathogenetic mechanisms of diarrhea and the routes of infection transmission is crucial for effective diagnosis, treatment, and prevention. Despite advances in medical science, diarrheal infections continue to cause substantial morbidity and mortality, as well as economic losses. Therefore,

implementing targeted preventive measures, improving sanitation, ensuring access to clean water, and educating the population, particularly vulnerable groups like children, are essential steps in controlling the spread of these infections. Continued research and development of simpler, more effective prophylactic methods tailored to specific climatic and geographic conditions will further enhance the global fight against diarrheal diseases.

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