MODERN MEDICINE AND PRACTICE
https://inovatus.es/index.php/ejmmp
EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE
Vol. 5 No. 12 (Dec - 2025) EJMMP ISSN: 2795-921X

PERIODS IN THE DEVELOPMENT OF INFECTIOUS DISEASES, DYNAMICS OF THE DEVELOPMENT OF INFECTIOUS DISEASES

Shukurova Shoxina Tuyg'unovna
Teacher of the "General Sciences" department of the Asia International University Bukhara Uzbekistan

Abstract: This article provides information about the concept of infection, the stages in the development of infectious diseases, and the dynamics of the development of infectious diseases. The microorganism's rapid growth period, the amount of toxic substance, and the organism's reactivity were studied. The relationships between microorganisms and microorganisms are explained. We can obtain anatoxins from the antigenic and immunogenic properties of toxins. Anatoxin is a toxin that has lost its toxigenic properties and, when administered to the body, produces antibodies, i.e. antitoxic immunity, just like an antigen. This condition is used for preventive purposes in cases of diphtheria, tetanus, and other diseases.

Keywords: Hyalurindase, invasiveness, neuraminidase, dysentery, typhoid fever, cholera, symbiosis, superinfection.

Introduction. When we say infection, we mean (infectio) to infect; It refers to the process that occurs after microbes and viruses enter human, animal, and plant organisms. An infectious process is a set of physiological and pathological processes that occur when pathogenic microbes enter the body, leading to a disruption of the physiological function of the body's internal environment.

Infectious disease is the final stage of the infectious process. Infectious diseases have been known since ancient times, but people of that time did not understand the causes of infectious diseases. In the mid-19th century, L. Pasteur, R. Koch, Mechnikov, Ivanovsky, and other scientists discovered that microorganisms are the causative agents of infectious diseases. The relationship between microorganisms and microorganisms is defined by the concept of SYMBIOSIS.

There are 3 forms of symbiosis, including:

1. Mutualism

2. Commensalism

3. Parasitism.

Mutualism (lat. muteus) is understood as the mutual association of 2 organisms (living together). For example, lactic acid bacteria live at the expense of the macroorganism, exerting a pathogenic effect on putrefactive microbes in the human intestine. Spread of infectious diseases.

Epidemic - a high incidence of infectious diseases. Usually recorded in a certain territory for a certain period of time.

When conditions are right, the epidemic spreads throughout the territory and increases in intensity.

Endemic - (Greek local) the long-term spread of diseases in a certain territory.

Pandemic - the intensive spread of an epidemic disease in one country and several countries, continents. Pandemic spread is characteristic of infectious diseases transmitted by airborne droplets and with a short incubation period. For example: Influenza.

Microbiological diagnostic methods of infectious diseases.

1. Microscopic or bacterioscopic method.

2. Bacteriological method.

3. Serological.

4. Allergic.

5. Virological.

6. Express diagnostics - IF method.

The main part. They live by benefiting the macroorganism. It depends on their ability to penetrate the tissue and suppress the process of phagocytosis.

1. Adhesion is the ability of a microorganism to adhere to a susceptible cell, that is, to adsorb. This process depends on the external structure of the microbial cell (cilia, villi, cilia) and receptors in the macroorganism cell.

2. Colonization - this process can occur on the cell surface and inside the cell. On the cell surface, for example, cholera vibrio multiplies by adhering to the surface of enterocytes. Intracellularly, for example, the dysentery bacillus multiplies in the cells of the large intestine.

3. Invasiveness - this process is associated with the ability of microbes to produce enzymes and disrupt or increase tissue permeability. Such enzymes include:

a) Hyalurindase - breaks down hyaluronic acid in tissue. As a result, the microbe penetrates the tissue.

b) Neuraminidase - cleaves neuraminic acid from polysaccharides, glycolipids, and glycoproteins that are part of various proteins. As a result, the permeability of the tissue increases.

4. Inhibition of the phagocytosis process. The substances that make up the capsule of different microorganisms are different, and their functions are also different. For example, the polypeptide in the anthrax capsule prevents this microbe from being engulfed by phagocytes. The polysaccharides in the capsule of the Pseudomonas aeruginosa protect this bacterium from being digested inside the cell. In addition, microbes are protected from phagocytosis by certain enzymes. For example, the coagulation enzyme of staphylococcus coagulates plasma. As a result, a protective shell (cover) is formed around the microbe. The fibrinolysin enzyme dissolves fibrin. For example, dysentery bacillus multiplies in the cells of the colon. Toxins play a major role in increasing the pathogenicity and virulence of microorganisms. Toxins are divided into two groups:

a) exotoxins

b) endotoxins

Research results. Exotoxin consists of a protein that microbes release into the external environment. Exotoxins are not resistant to external influences and are thermolabile, that is, they are not resistant to temperature. It is susceptible to the effects of chemicals. It has high specificity and high toxicogenicity. Both types of toxins damage specific organs and tissues. Exotoxins are characterized by signs of toxicity, antigenic immunogenicity. Toxins are divided into: neurotoxins, histotoxins, enterotoxins, leukocidins, and

hemolysins, depending on their mechanism of action. We can derive anatoxins from the antigenicity and immunogenicity of toxins. . Anatoxin is a toxin that has lost its toxigenic properties and, when administered to the body, produces antibodies, i.e. antitoxic immunity, just like an antigen. This condition is used for preventive purposes in cases of diphtheria, tetanus, and other diseases. Some toxins have different effects on the body: lethal, dermonecrotic, cytotoxic, and neurotoxic. Toxins vary in their biological activity and toxicity. Some toxins determine the pathogenesis and clinical course of the disease, while others do not. Endotoxins consist of a lipopolysaccharide-protein complex that is tightly bound to the microorganism cell. These toxins are not specific; the clinical picture caused by endotoxins from different microorganisms is the same. The reactions that occur in the body are general - fever, headache, etc. The strong binding of endotoxin to the microorganism cell ensures its resistance to temperature and other external factors. To isolate ecdotoxin, it is necessary to break the cell wall of the microorganism. The effect of the toxin is determined by the sensitivity of animals to this toxin. DLm is a very small dose of the toxin that is capable of killing a large number of experimental animals. LD50 is a dose of toxins that causes the death of 50% of the experimental animals. The doses of toxins, microbes, determining their virulence and toxigenicity depend on their type, strain of microbes, the time of exposure to toxins and the route of administration to the body. The source of the infectious agent is humans and animals. All infectious diseases are divided into 2 groups depending on their source of origin:

1. Anthroponoses - the source of infection is man.

2. Zoonoses - the source of infection is animals. The mechanism of transmission of the causative agent of the infection is different for each type of microorganisms, depending on the location of the microorganism in the sick organism and the exit routes.

The infection is transmitted in four different ways;

1) ORAL - transmitted through food, water (dysentery, typhoid fever, cholera).

2) airborne - the causative agent settles in the respiratory tract (influenza, tetanus).

3) Transmissible - the causative agent is in the blood and is transmitted by BLOOD-sucking insects.

4) By contact:

a) By direct contact. For example, venereal diseases.

b) Indirect - through contaminated objects. For example, dysentery.

The entry point of the pathogen is of great importance in the development of infectious diseases. The portal of entry of infection is the organs and tissues of the host organism, through which pathogenic microorganisms enter. For example, the causative agent of typhoid fever causes disease only when transmitted orally. If these microorganisms enter through other routes, they will not cause disease. Some microorganisms enter the body in different ways. At this time, the portal of entry determines the forms of clinical transmission (cutaneous form, pulmonary form, intestinal form), (for example, plague, tularemia, anthrax).

Periods in the development of infectious diseases.

The dynamics of the development of infectious diseases occurs in several periods.

1. Incubation period. This period includes the time from the moment the microbe enters the body until the appearance of clinical symptoms, during which the pathogen multiplies, accumulates and its toxins accumulate less. The duration of the disease varies for different infectious diseases. The incubation period is short in some diseases, while in others it lasts several years. The duration of this period depends on various reasons:

1) The period of rapid reproduction of the microorganism.

2) The amount of toxic substance.

3) The reactivity of the organism.

2. Prodromal period - begins after the incubation period, when symptoms common to all infectious diseases appear (headache, malaise, fever). It lasts 4-5 days.

3. The period of development of the main clinical symptoms is the period of exacerbation of the disease. During this period, depending on the type of pathogen, specific symptoms of each disease appear. The duration of this depends on the type of infection.

4. Recovery period - the body's normal physiological function is restored.

Forms of the infectious process.

Depending on the route of entry of the pathogen into the body, infections are divided into exogenous and endogenous. Exogenous infection - the pathogen comes from the external environment. In endogenous infections, the causative organism is part of the microflora and causes the disease when the body's defenses are weakened. Depending on the duration of the disease, it is divided into 2 groups:

1. Acute form of infection - in this case, the infection does not enter the body.

2. Chronic form - persists in the body for a long time even after recovery.

If the infection is caused by 1 pathogen, it is called monoinfection.

If the body is infected with 2-3 different pathogens at the same time, it is called a mixed infection.

Conclusion. So, when a second pathogen is transmitted while one disease is ongoing, it is called a secondary infection. When the body is reinfected with a previous pathogen, it is called reinfection. When the pathogen re-infects the patient before the disease has resolved, it is called superinfection. For example, gonorrhea and syphilis.

When the symptoms of the disease recur, without the pathogen entering the body again, but rather the symptoms of the pathogen remaining in the body, it is called a relapse. If a patient continues to shed germs even after recovery, it is called a carrier. When a disease-causing microbe enters the bloodstream and spreads throughout the body through the BLOOD (hematogenous route), it is called bacteremia.

If viruses spread in this way, it is called viremia. In bacteremia, the microbe does not multiply in the blood. When the microbe multiplies in the blood, it causes septicemia. The release of bacterial toxin into the bloodstream causes toxinemia.

References

1. Shukurova, S. (2024). Optimizing synergies: Effective strategies for integrating economic and environmental interests in sustainable development. In E3S Web of Conferences (Vol. 587, p. 04007). EDP Sciences.
2. Tuyg'unovna, S. S. (2024). MEDICINAL PLANTS THAT ARE WIDELY USED IN NATURE, RICH IN VITAMINS. ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ, 39(3), 242-247.
3. Tuyg'unovna, S. S. (2024). THE PROCESS OF PACKAGING MEDICINAL PLANTS. ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ, 39(3), 248-256.
4. Tuyg'unovna, S. S. (2024). ABOUT USEFUL MEDICINAL PLANTS RICH IN LIPIDS USED IN MEDICINE. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *39*(3), 235-241.

5. Tuyg'unovna, S. S. (2024). MEDICINAL PLANTS CONTAINING ESSENTIAL OILS. ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ, 41(4), 62-69.
6. Tuyg'unovna, S. S. (2024). CULTIVATION OF MEDICINAL PLANTS AND FORMS OF PREPARATION. EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE, 4(5), 71-75.
7. Tuyg'unovna, S. S. (2024). SYSTEMATIC ANALYSIS OF MEDICINAL PLANTS. *Лучшие интеллектуальные исследования*, *19*(5), 159-164.
8. Tuyg'unovna, S. S. (2024). BAKTERIYALAR GENETIKASI. BAKTERIYALARDA GENETIK ALMASHINUV MIKROORGANIZMLARNING O 'ZGARUVCHANLIGI. *MASTERS*, *2*(5), 183-192.
9. Tuyg'unovna, S. S. (2023). USEFUL PROPERTIES OF THE MEDICINAL PRODUCT AND USE IN MEDICINE. *Gospodarka i Innowacje.*, *40*, 179-181.
10. Tuyg'unovna, S. S. (2023). CHEMICAL COMPOSITION OF MEDICINAL PLANTS AND CLASSIFICATION. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, *3*(11), 33-35.
11. Tuygunovna, S. S. (2023). Ways to Use Mint and Peppermint. *EUROPEAN JOURNAL OF BUSINESS STARTUPS AND OPEN SOCIETY*, *3*(12), 20-23.
12. Tuygunovna, S. S. (2023). Medicinal Plants Containing Glycosides. *EUROPEAN JOURNAL OF BUSINESS STARTUPS AND OPEN SOCIETY*, *3*(12), 24-27.
13. Tuyg'unovna, S. S. (2024). ABOUT USEFUL MEDICINAL PLANTS RICH IN LIPIDS USED IN MEDICINE. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *39*(3), 235-241.
14. Tuyg'unovna, S. S. (2024). SYSTEMATIC ANALYSIS OF MEDICINAL PLANTS. *Лучшие интеллектуальные исследования*, *19*(5), 159-164.