PARASITIC INFECTIONS (MALARIA, LEISHMANIASIS, AMEBIASIS)

Otajonov Shoxruxbek Murodbekovich
Email: otajonovshoxrux744@gmail.com
Address: Tashkent, Uzbekistan
Place of study: Tashkent state medical university
https://doi.org/10.5281/zenodo.20179537

Annotatsiya: Parazitar infeksiyalar inson organizmida protozoy parazitlar tomonidan chaqiriladigan, murakkab patogenezga ega bo‘lgan, ko‘plab organ va tizimlarni bir vaqtning o‘zida zararlovchi og‘ir yuqumli kasalliklar guruhiga kiradi. Ushbu maqolada malyariya, leyshmanioz va amebiaz kasalliklarining etiologiyasi, patogenezi, morfologik o‘zgarishlari, immunologik javob, klinik kechishi, asoratlari hamda molekulyar patogenez mexanizmlari patologik anatomiya nuqtai nazaridan keng va chuqur ilmiy tahlil qilindi. Robbins Basic Pathology, Gray’s Anatomy, Harrison’s Internal Medicine, WHO, CDC va NCBI ma’lumotlariga asoslanib, ushbu kasalliklarda asosiy zarar mexanizmi hujayra ichiga kirish, ko‘payish, immun tizimdan qochish, oksidativ stress chaqirish va to‘qimalarni progressiv destruksiyaga uchratish bilan bog‘liqligi ko‘rsatildi.

Kalit so‘zlar: parazitar infeksiyalar, malyariya, leyshmanioz, amebiaz, protozoa, patologik anatomiya, gemoliz, immun javob, nekroz, yallig‘lanish

Abstract: Parasitic infections are a group of complex infectious diseases caused by protozoan parasites that affect multiple organ systems and lead to severe systemic pathology. This article provides an extensive and in-depth scientific analysis of malaria, leishmaniasis, and amebiasis, focusing on their etiology, pathogenesis, morphological alterations, immune response mechanisms, clinical progression, complications, and molecular pathological processes. Based on authoritative sources such as Robbins Pathology, Gray’s Anatomy, Harrison’s Principles of Internal Medicine, WHO, CDC, and NCBI, it is demonstrated that the main pathogenic mechanisms include intracellular invasion, parasite replication, immune evasion, oxidative stress induction, and progressive tissue destruction.

Keywords:parasitic infections, malaria, leishmaniasis, amebiasis, protozoa, pathology, hemolysis, immune response, necrosis, inflammation

Аннотация: Паразитарные инфекции представляют собой сложную группу инфекционных заболеваний, вызываемых простейшими паразитами и поражающих множество органов и систем организма человека. В данной статье проведен углубленный научный анализ малярии, лейшманиоза и амебиаза с точки зрения их этиологии, патогенеза, морфологических изменений, иммунного ответа, клинического течения, осложнений и молекулярных механизмов патологии. На основе Robbins Basic Pathology, Gray’s Anatomy, Harrison’s Internal Medicine, WHO, CDC и NCBI установлено, что ключевыми механизмами патогенеза являются внутриклеточное проникновение, размножение паразитов, уклонение от иммунного ответа, индуцирование оксидативного стресса и прогрессирующее разрушение тканей.

Ключевые слова: паразитарные инфекции, малярия, лейшманиоз, амебиаз, простейшие, патология, гемолиз, иммунитет, некроз, воспаление

Introduction

Parasitic infections are considered one of the most important global health problems and are classified by the World Health Organization as diseases with high epidemiological risk. They

are mainly caused by protozoan parasites and induce complex pathological changes in the human body.

Malaria is caused by Plasmodium species and is transmitted by mosquitoes (Anopheles), developing inside erythrocytes. Leishmaniasis is caused by Leishmania species, which infect macrophages and suppress the immune system. Amebiasis is caused by Entamoeba histolytica, which destroys intestinal epithelial cells and may spread to the liver.

Malaria damages erythrocytes, causing severe hemolytic anemia, febrile attacks, and hypoxia.

Leishmaniasis leads to granulomatous inflammation and immune suppression in cutaneous and visceral forms.

Amebiasis causes intestinal wall destruction, ulcers, and liver abscesses.

Literature review

In Robbins Basic Pathology, parasitic infections are described as processes associated with cellular destruction, activation of inflammatory mediators, and necrosis. Malaria is characterized by massive erythrocyte destruction leading to hemolytic anemia.

Gray's Anatomy and Junqueira Histology describe granuloma formation, fibrosis, and tissue degeneration caused by parasitic infections. Immune cell infiltration is also a key pathological feature.

According to Harrison's Principles of Internal Medicine, severe amebiasis may result in liver abscesses, sepsis, and intestinal perforation. WHO and CDC reports confirm malaria as one of the leading parasitic causes of mortality worldwide.

Charles Louis Alphonse Laveran discovered the malaria parasite and laid the foundation of modern parasitology.

Ronald Ross demonstrated malaria transmission through mosquitoes, contributing significantly to epidemiology.

Materials and methods

This study was conducted based on a comprehensive review of scientific literature in pathological anatomy, microbiology, parasitology, immunology, and infectious diseases. The etiology, pathogenesis, molecular mechanisms, intracellular development stages, immune interactions, and tissue-level changes were analyzed in depth.

Additionally, parasite life cycles, virulence factors, antigenic variation, immune evasion strategies, and organ tropism were scientifically evaluated.

Results

In malaria, massive erythrocyte hemolysis, hemoglobin degradation, splenic and hepatic hyperplasia, microcirculatory disturbances, and severe hypoxia were observed. In leishmaniasis, parasite replication inside macrophages, granulomatous inflammation, T-cell immune suppression, and chronic infection development were identified. In amebiasis, deep necrosis of intestinal mucosa, flask-shaped ulcers, liver abscess formation, and systemic intoxication were detected.

Conclusion

Parasitic infections induce complex, multi-stage pathological processes in the human body. They damage blood, intestinal, hepatic, and immune systems, leading to severe systemic complications. Early diagnosis, prevention, and treatment are essential. Pathological anatomy serves as a fundamental scientific basis for understanding these mechanisms.

Adabiyotlar, References, Литературы:

1. Robbins Basic Pathologyhttp://www.elsevier.com/books/robbins-basic-pathology/kumar/978-0-323-53113-9
2. Gray's Anatomyhttp://www.elsevier.com/books/grays-anatomy/standring/978-0-7020-5230-9
3. Harrison's Principles of Internal Medicinehttp://accessmedicine.mhmedical.com/book.aspx?bookid=3095
4. Junqueira Basic Histologyhttp://www.mheducation.com
5. Moore Clinically Oriented Anatomyhttp://shop.lww.com/Clinically-Oriented-Anatomy/p/9781975143249
6. Langman's Medical Embryologyhttp://www.lww.com/Medical-Embryology/p/9781975173253
7. Netter's Atlas of Human Anatomyhttp://www.elsevier.com/books/netters-atlas-of-human-anatomy/netter/978-0-323-39324-0
8. World Health Organization Malaria reporthttp://www.who.int/news-room/fact-sheets/detail/malaria
9. World Health Organization Leishmaniasishttp://www.who.int/news-room/fact-sheets/detail/leishmaniasis
10. Centers for Disease Control and Prevention Parasiteshttp://www.cdc.gov/parasites
11. NCBI Bookshelf Parasitic diseaseshttp://www.ncbi.nlm.nih.gov/books
12. CDC Malaria http://www.cdc.gov/malaria
13. CDC Leishmaniasishttp://www.cdc.gov/parasites/leishmaniasis
14. Oxford Textbook of Pathologyhttp://global.oup.com
15. National Library of Medicinehttp://www.nlm.nih.gov