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Clinical and Diagnostic Aspects of Parasitology

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Description

Parasitology is the study of parasites, their hosts, and their relationship to each other. As a biological discipline, the scope of parasitology is not determined by the respective organism or the environment, but by its way of life. It thus forms a synthesis of other disciplines and uses techniques from areas such as cell biology, bioinformatics, biochemistry, molecular biology, immunology, genetics, evolution and ecology.

Studying these different organisms' means even when they are not studying the same organisms or diseases, the topic is often divided into simpler, more focused units using common techniques. Research in parasitology falls somewhere between two or more of these definitions. In general, the study of prokaryotes falls within the realm of bacteriology rather than parasitology.

Medical parasitology traditionally involves the study of three main groups of animals: parasitic protozoa, parasitic helminthes (worms), and arthropods, which directly cause disease or act as vectors for various pathogens. A parasite is a pathogen that damages and feeds on its host at the same time. Some organisms called parasites are actually commensals in the sense that they do not benefit or harm their host. Although parasitology originated in zoological sciences, it is now an interdisciplinary field that is heavily influenced by microbiology, immunology, biochemistry, and other life sciences.

Infection caused due to parasites

Diseases caused by these parasites represent a major health problem for humans worldwide. The incidence of many parasitic diseases has recently increased in these years instead of decreasing. Other parasitic diseases have increased in importance as a result of the AIDS epidemic. The migration of parasite-infected people, including refugees, from areas with high parasite prevalence rates has also exacerbated health problems in some countries.

Unicellular parasites (protozoa) and multicellular parasites (helminthes, arthropods) are antigenically and biochemically complex, as are their life histories and the pathogenesis of the diseases they cause. Parasitic organisms usually go through various stages of development over the course of their lives, including changes not only in structure, but also in biochemical and antigenic composition. Some larval stages of helminthes bear little resemblance to adult stages. Some parasitic protozoa also change significantly throughout their life; For example, *Toxoplasma gondii* is intestinal coccidia in cats, but it takes a different form in humans and is localized in deep tissues.

Various methods and samples are used for diagnosis. Because the most common parasites are enteric parasites, microscopic examination of stool samples is used more often to diagnose parasitic diseases than any other laboratory procedure. Culture has been of little use in the diagnosis of most parasitic infections, although it has been used in *Trichomonas vaginalis* and *Entamoeba histolytica* infections. Immunodiagnostic tests are useful for several infections, including extraintestinal amebiasis, visceral larva migrans, and trichinosis.

Diagnosis of parasitic infections depends on clinical diagnosis and laboratory diagnosis. Laboratory diagnosis includes documentation of characteristic forms of the parasites in feces, urine, sputum, bodily secretions, or blood. Serological tests are also available for certain parasites. Many different immune mechanisms have evolved to combat pathogenic parasites, depending on the size of the invading organism and the relative physical location of the tissue in which the targeted responses occur.

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