

An Overview of Microbiology in Medical Science

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EDITORIAL NOTE

Microbiology is the study of microbes; one of the subset of this subject is applied to medicine, concerned with the prevention, diagnosis and treatment of infectious diseases and other clinical applications of microbes [1]. Microbes are very important part of medical science as they are too small to be seen directly some special methods are needed to investigate them.

Human immune system is the most important part of medical microbiology because immune system is the part which focuses on the body's response to invading microorganisms. This subject deals with the general concepts, principle and process of bacterial microbiology and major bacteria human pathogens. Similar sections cover virology, mycology, and parasitology. Each section deal with the mechanisms of infection characteristic of that type of microorganism, provide a framework for understanding the clinical behavior of the pathogens [2]. Infectious Diseases in organ system is also come under medical microbiology.

Because of the nature of our immune system body cells neutralize microbes that enter our body and those neutralize microbes commonly exhibited from body by pus formation and inflammation of wounds. Macrophages also play important role in immune system; they ingest microbes that enter our body through open wounds. Sometime microbes get the ability to adapt and mutate rapidly, which leads to opportunistic infectious diseases like HIV [3]. Those diseases usually not effect normal people, but may cause serious infections in low immune patients. Contrarily some of the microbes can also help us in various ways especially by providing secondary nutrients and help in digestion example of such bacteria is lactobacillus.

Pathogens are the microorganisms which are capable of causing infections in healthy people. This type of organisms can be isolated from clinical specimens or may derive from bacteria and fungi that are permanently living on body surfaces or from the environment [4]. Thus, the meaning of lab discoveries will rely upon how the samples were gathered and should be evaluated with regards to the clinical circumstance. Serious nosocomial contaminations are frequently caused by commensals and ecological life forms. An unmistakable differentiation between

an essential microbe, a commensal and a toxin isn't obvious 100% of the time. The present circumstance is every now and again experienced in immunologically compromised patients. Thus, the contact between the clinical microbiologist and the clinician is of principal significance to guarantee a reasonable translation of laboratory findings [5].

Inside the digestive track in mouth and on skin, there dwell more than of 10¹³ microbial cells, 100-fold more than the total cells in human body. Still only one microorganism of some unacceptable kind in the wrong way might be lethal.

The study of the patterns, causes, and effects of disease conditions in any populations is known as Epidemiology, an important part of medical microbiology. The clinical aspect of the field primarily focuses on the detection of microbial infections in individuals, to find their effects and the methods of treatment for those infections [6].

The advancement in microbiology has an important role in transforming the diagnosis, prevention and cure of infection. Proper development in medical microbiology contributes in the improvement of human health and increasing life expectancy. Sometimes infection may be dismissed as of minor concern to modern doctors in wealthy countries because of the conclusive epidemic and fatal infections. However, infection does not come close to our thoughts. In poor nations, an expected 10 million little youngsters pass on every year from the impacts of diarrhoea, measles, malaria, tetanus, diphtheria and whooping cough alone. Numerous other traditional scourges, for example, tuberculosis, cholera, typhoid and infection, keep on incurring significant damage. Despite the fact that we can possibly forestall practically these deaths, political and social issues continually have impact, and more compelling and monetary method for conveyance give a steady test [7].

Diagnosis in medical microbiology plays an important role in the treatment process of diseases. Microbes sometime also helped in combating infectious disease and promoting health. With the discovery of penicillin by Alexander Fleming it was proved that microbes also can contribute a major role in treatment. From that day development of new life saving antibiotics from microbes like bacteria genus *Streptomyces* and many others

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become an important process [8]. Not only as source of antibiotics but some may also act as probiotics to provide health benefits to humans.

Proper understanding of the principles of microbiology and human cell mechanisms allows pharmacists to discover antimicrobial drugs that would prevent an escalating number of communicable diseases. Pharmacists and microbiologists work synergistically to guarantee that drug treatments focus on the opportunistic microbes without hurting its human host. One more significant job in drugs is the utilization of organisms for the medicinally significant examinations, like Bacteriorhodopsin a protein from the plasma layer of *Halobacterium salinarum* [9].

Investigation of the environment and transmission of sickness, including irresistible infection, is the territory of the significant general wellbeing discipline of the study of disease transmission. Significant devices incorporate reconnaissance of the commonness and occurrence of any disease.

Information on the manners by which miniature organic entities spread and cause illness in networks has delivered imperative experiences that can be utilized to illuminate compelling control programs in medical clinics and the more extensive local area. Checking of the predominance and frequency of contamination on an institutional, nearby, public or worldwide premise can comparably help in the detailing of strategies that lessen the effect of explicit diseases (observing of flu infection variations to prevent worldwide pandemics is a genuine model) or of medication safe miniature life forms like those causing intestinal sickness, tuberculosis or staphylococcal diseases [10].

Microbiology is an inseparable part of medicine, which provide the health care sector knowledge about diagnosis, categorize and proper and effective process of treatment. The pharmaceutical

industry and medical industries are always involved in discovering new usage of micro bacteria, which have the potentials and possibilities to brighten humankind's future.

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