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Infectious Diseases: Etiology, Epidemiology and Clinical Manifestations

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About the Study

Infectious diseases have affected humanity throughout history. Numerous deaths and disproportionally huge economic losses were the results of undiscovered infectious diseases that pose a serious danger to world health, global economy, and global security. These diseases are being studied by scientists and government organizations throughout the world in an effort of better understanding and prevent the transmission as this part of approach plays a crucial role. Because infectious diseases can be caused by a diverse range of bacteria, fungi, parasites, and viruses, the pathways to infection range, which is why there is no one preventative measure to avoid the spread of infectious diseases in general. The inefficiency in the diagnosis of a causative pathogen or in the response may also lead to social destabilization due to the global urbanization and connectivity [1].

The COVID-19 pandemic is often labeled as an 'unusual' incident as the emergence of the Severe Acute Respiratory Syndrome Coronavirus 2 caught many by shock. However, the novel coronavirus pandemic was highly predicted from a scientific and historical perspective. Infectious diseases have had a significant impact on both history of mankind and nature. Infectious diseases as natural selection agents have played a key role in the evolution of the human species. In the face of such incursions by microscopic invaders, human societies have been compelled to adapt to infectious agents on both the genetic and cultural levels [2].

Etiology

Identifying the sources and causative agents is required for diagnosis, treatment, restricting the spread, controlling, or preventing an infectious disease caused by an unknown pathogen. Due to the lack of reliable or adequate serologic tests, very little is known about the etiologic agents. Koch's postulates must be satisfied when the microbial etiology of an outbreak produced by a rare or unknown pathogen is identified. Recent research recommends reverse microbiological etiology to predict and prevent a potential infectious disease caused by an unknown microorganism considering the global health concerns [3,4].

Epidemiology

The transmission and clinical manifestations of an infection in human populations are determined by a number of factors, particularly host genetics. The advancement of infectious disease precision epidemiology and its implications has enhanced the ability of scientists to respond on outbreaks. Observable risk factors that might impact the trait under study are included in epidemiologic information. Genetic epidemiology techniques and dense human genetic maps along with the rising availability of candidate genes that were recently developed are crucial for finding genes that influence human infectious diseases [5].

Clinical Manifestation

A clinical manifestation is the physical result of a disease or infection when immune system of the people is suppressed and have weaker defenses against the wide variety of bacteria, viruses, fungi, and other pathogens that are present almost everywhere. Among the other methods, radiological and serological methods are the most preferred, with the radiological method being the most recommended as it can diagnose the infection quickly and accurately with fewer false-negatives, and it can be effective in protecting the patient's life by initiating treatment and preventing the transmission of infection to other people [6].

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