

Abstract

Health care professionals and scientists working in pathology are experts in illness and disease. They utilise their expertise to support every aspect of healthcare, from guiding Health care professionals to treat common diseases, to using cutting-edge genetic technologies to diagnose patients with life-threatening conditions. Pathologists play a major role in research, advancing medicine, and innovating new treatments to fight against viruses, infections, and diseases like cancer.

Emerging and reemerging infectious diseases and therefore the threat of bioterrorism signalize to the growing importance of the power of the anatomic pathologist to acknowledge infectious diseases. Most of the developed world and much of the developing world have been spared from devastating diseases, such as smallpox, diphtheria, and paralytic poliomyelitis, through vaccination and worldwide eradication efforts. Nevertheless, new pathogens continuously emerge, old adversaries, reappear when suitable conditions such as war or famine exist, and microbes continue to develop resistance, even to the new broad-spectrum antimicrobial agents. Furthermore, global environmental changes, such as human encroachment into previously wild ecosystems, deforestation, damming of river systems, expansion of irrigation systems, and possibly changes induced by global warming, are likely to alter the current patterns of infectious diseases, particularly vector-associated or parasitic diseases. Closer to home, and of more immediate concern, is the diagnosis and treatment of opportunistic infections that affect the ever-growing population of patients with iatrogenic, inherited, or acquired immunodeficiencies. In this article, we review methods used in the pathologic diagnosis of infections, emphasizing the critical role of the anatomic pathologist in the diagnosis of both routine and emerging infectious diseases.

Viruses cause a good range of human diseases, starting from acute self resolving conditions to acute fatal diseases. Effects that arise long after the first infection also can increase the propensity for chronic conditions or cause the event of cancer. Recent advancements within the fields of virology and pathology are helping in improving our understanding of viral pathogenesis, in providing improved vaccination strategy data and in developing newer, more effective treatments for patients all over the world. The reports assembled here specialize in the interface between virology and pathology and encompass aspects of both the clinical pathology of viral disease and therefore the underlying disease mechanisms. Articles on emerging diseases caused by Ebola virus, Marburg virus, coronaviruses like SARS and MERS, Nipah virus and noroviruses

are followed by reviews of enteroviruses, HIV infection, measles, mumps, human respiratory syncytial virus, influenza, cytomegalovirus, and varicella-zoster virus.

The diagnosis of complex diseases, infectious or otherwise, requires the collaborative efforts of clinicians, radiologists, and pathologists. The differential diagnosis generated at the bedside through patient history and physical examination is narrowed through consultation and thoughtfully ordered radiographic and laboratory studies. The anatomic pathologist, by providing the morphologic interpretation of biopsies and cytologic preparations, is an important member of the diagnostic team. Histopathologic and cytopathologic studies often allow for the definitive establishment or exclusion of a wide variety of diseases. In some instances, a microorganism that fails to grow in culture could also be detected by means of histopathologic examination of tissue samples or cytopathologic examination of specimens of body fluids or aspirates. Conversely, cultures may yield the causative microorganisms from tissues that demonstrate an inflammatory response strongly indicative of infection, but in which microorganisms are not identified in histologic sections.

Pathogenesis is that the process by which viral infection results in disease. Pathogenic mechanisms include entry of the virus at a body

