

The role of pathology in diagnosis of emerging viral zoonoses

Wun-Ju Shieh

Centers for Disease Control and Prevention, USA

Zoonoses are a complex group of diseases caused by a remarkable diversity of pathogenic microorganisms that ordinarily reside in animal. These diseases have caused severe illness in humans and posed major threats to global health.

Detection and surveillance for emerging zoonoses need a multidisciplinary approach. The intertwining complexity of these pathogens with their diverse tissue tropisms, direct effects on host cells, multiphasic immunological responses, and additional influence of superimposed secondary agents, is beyond the expertise of a single discipline in modern medicine.

Pathology plays a key role as a bridging subspecialty in multidisciplinary approach to study emerging viral zoonoses. Pathologic examination, if available, can establish a more specific diagnosis correlated with clinical manifestations. Using tissue samples obtained from biopsy or autopsy as the source for laboratory workup, pathologists have made various contributions to our understanding of emerging viral zoonoses in diagnostics, pathogenesis, epidemiology, and clinical aspects of these diseases.

Recent advances in molecular biology have revolutionized the practice of medicine, especially in diagnostic pathology and laboratory medicine. The practice of pathology has evolved from using morphologic pattern recognition as the main tool to a sophisticated medical subspecialty by applying a wide array of advanced immunologic and molecular techniques, such as immunohistochemistry (IHC), in situ hybridization (ISH), polymerase chain reaction assay (PCR), and tissue microarrays. It has become essential to utilize these techniques as an integrated laboratory utility to take full advantage of the pathology approach.

Biography

Wun-Ju Shieh graduated from Taipei Medical University in 1979. He completed an internal medicine residency and infectious disease subspecialty training in 1986. He received a Master of Public Health from Harvard University in 1987, followed by a Ph.D. in Microbiology & Immunology from Vanderbilt University in 1992. Afterwards, he completed a combined anatomical and clinical pathology residency training at Vanderbilt University Medical Center and an infectious disease pathology fellowship at CDC. He has been working as a medical officer and pathologist at CDC since 1995. He has participated many outbreak investigations, and has published more than 120 papers in peer-review journals.

wbs9@cdc.gov