Rapid detection of infectious agents with metagenomics sequencing

문 장 섭
서울대병원

Jang-sup Moon, MD, PhD
Department of Neurology / Neurosurgery, Seoul National University Hospital

Rapid detection of the pathogen is the most important step in the management of patients with infectious diseases. Infectious meningoencephalitis is caused by a great variety of pathogens including bacteria, virus, fungus and parasite. Increasing number of emerging bacterial pathogens and novel viruses lead to a great challenge for the detection of pathogens using traditional diagnostic tests (e.g. serological tests, culture, PCR, etc).

Owing to the recent advances of sequencing technologies, metagenomics is being expected to revolutionize the mode of pathogen identification as a culture-independent method. Moreover, recent nanopore sequencing technology enables real-time analysis of the sequencing reads, which is significantly helpful for reducing turnaround time.

In this talk, I will review the latest advances in the pathogen diagnostics using metagenomics approach and introduce several successful cases. Next, I will share my research experiences of rapid pathogen detection from clinical samples using nanopore sequencing. Lastly, I will discuss about the potential application of metagenomics in various fields of researches and clinical practice.