Monkeys: A New Global Threat

As per the latest update issued by the WHO on 29 May, 2022 within a span of two weeks since the first case of Monkeypox was reported from United Kingdom, a total of 257 laboratory confirmed cases and around 120 suspected cases have been reported to the WHO. These cases are reported from 23 member countries spread across four WHO regions, which are not endemic for monkeypox virus. And this number is expected to increase further with the surveillance in non-endemic and endemic countries. Maximum number of the cases are reported from the United Kingdom and Canada; followed by Portugal, Spain and United States of America. Most of the reported cases have involved mainly, but not exclusively, men who have sex with men (MSM). A major worrisome cause is the absence of travel history to endemic areas in the confirmed monkeypox cases. This sudden unprecedented rise of the monkeypox cases in the non-endemic areas has raised a concern – Is this the rise of another global threat??

This pox-like illness was first discovered in 1958, when an outbreak occurred in a colony of Asian monkey’s kept for research, hence named as Monkeypox. But it is more commonly found in squirrel, rat, and shrew species than monkey, occasionally spilling over into the human population, where it spreads mainly through close contact. According to the Head of the genomics lab at the National Institute of Biomedical Research (INRB) and a lab in Goma (DRC), the cause of the increase in the number of cases is due to the invasion of the forests by humans. The availability of full genome sequence of the virus by INRB and a lab in Goma can help in the development of newer treatment options in the future. Till then the news of the availability of a vaccine for high risk contacts of cases in USA and promising results of an under trial drug by University of Oxford gives a new hope to us. (Science.Org 1 June, 2022)

CRISPR: Newer Technology to Detect Tuberculosis

In 2020, approximately 9.9 million people fell ill due to tuberculosis, including 1.1 million children. In spite of the fact that tuberculosis (TB) is a curable and preventable disease, it is the second most common infectious cause of death causing 1.5 million deaths in 2020 globally.

The current diagnostic methods which use sputum based tests, have suboptimal detection rates because i) getting a good sputum sample is difficult, especially in children, ii) in immunocompromised HIV patients and cases having extrapulmonary disease can have low bacteria load in the sputum, which can lead to false negative results. In order to find the solution for this problem a team of researchers in New Oreleons, USA evaluated the use of CRISPR-based assay to detect the cell-free DNA from live Mycobacterium tuberculosis bacilli (Mtb-cfDNA).

The CRISPR-based fluorescence assay to detect Mtb-cfDNA demonstrated >90% sensitivity and specificity in a pooled adult and pediatric group, including children with HIV (adult TB - 96.4% sensitivity and 94.1% specificity; pediatric TB - 83.3% sensitivity and 95.5% specificity). Simultaneously, they have also demonstrated that the blood levels of the Mtb-cfDNA start falling within a month of treatment and gets cleared of after the end of treatment i.e. 6 months, thus highlighting the role of CRISPR-based fluorescence assay to detect Mtb-cfDNA in monitoring the treatment. Wide availability of this technique will be of much help in detecting TB in paucibacillary conditions and monitoring the treatment in high disease burden countries. (The Lancet Microbe 31 May, 2022)

Acute Hepatitis of Unknown Etiology in Children

According to the WHO Multi-country Disease Outbreak news, there are recent reports of acute hepatitis of unknown etiology in children. Between 5 April and 26 May 2022, in total six hundred fifty cases have been reported from 33 countries located in the five WHO regions. Out of these 650 cases, 374 (54%) were from WHO European region countries. Majority of these cases had severe hepatitis and a higher percentages developed acute liver failure. Liver transplant was required by 38 (6%) children and 9 (1%) deaths were reported.

The key findings of the Joint Surveillance Report by the WHO’s Regional Office for Europe (EURO) and the European Centre for Disease Prevention and Control (ECDC) showed that three-fourth of the children who have acute hepatitis of unknown etiology have age less than 5 years, 60% samples were positive for the Adenovirus and only 12% were positive for SARS-CoV-2 on PCR among those tested. Based on the case definition, the common causes of acute hepatitis in children viz., hepatitis A-E viruses, have been excluded during the initial laboratory testing.

Due to the lack of a definitive etiology and high positivity rates in the samples tested for Adenovirus, multiple possible explanations like emergence of a novel adenovirus, SARS-CoV-2 co-infection, and increased susceptibility amongst the unexposed children are arising. Possibility of the presence of this condition in the countries not reporting cases at present cannot be ruled out completely due to the variable testing capacity among different countries. But these countries must collect and store all possible samples from the cases meeting the case definition criteria, for future investigations. Until more information is available, WHO has recommended to follow the standard precautions, and to implement contact and droplet precautions for suspected or probable cases in the health facilities. (WHO.int 27 May, 2022)

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