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Circulation and molecular epidemiology of enteroviruses in paralyzed, immunodeficient and healthy individuals in Tunisia, a country with polio free status since decades

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Abstract

This report is an overview of Enterovirus (EV) detection in Tunisian polio-suspected paralytic cases (Acute Flaccid Paralysis (AFP) cases), healthy contacts, and patients with Primary Immunodeficiencies (PID), during 11 years. A total of 2735 clinical samples were analyzed for EV isolation and type identification according to World Health Organization recommended protocols. The three Poliovirus (PV) serotypes and 28 different Non-polio Enteroviruse (NPEV) were detected. The NPEV detection rate was4,3%, 2.8%, and 12.4% in AFP cases, healthy contacts, and PID patients, respectively. The predominant species was EV-B and circulation of viruses from species EV-A was noted since 2011. All PVs detected were of Sabin origin. The PV detection rate was higher in PID patients as compared to AFP cases and contacts (6.8%, 1.5%and 1.3% respectively). PV2was not detected since 2015. Using nucleotide sequencing of the entire VP1 region, 61 strains were characterized as Sabin-like. Among them, six strains of types 1 and 3 PV were identified as pre-VDPV. Five types 2 PV, four strains belonging to type 1 PV, and two strains belonging to type 3 PV were classified as iVDPVs. The data presented provide a comprehensive picture of EVs circulating in Tunisia over the 11-years, reveal changes in their epidemiology as compared to previous studies, and highlight the need to set up a warning system to avoid unnoticed PVs.

Biography

Anissa Chouikha (PhD) is Assistant Professor in virology at the Laboratory of Clinical Virology in Pasteur Institute of Tunis since September 2009. The laboratory is a WHO reference laboratory for the surveillance of Poliomyelitis and Measles which represent the Eastern Mediterranean Region (EMR). She is working in close collaboration with WHO, the Center of Disease Control and Prevention (CDC) in Atlanta (USA) and with CDC Africa. Furthermore, we are engaged in the molecular epidemiology of enteric and hepatitis viruses as well as arboviruses. In the laboratory, she was responsible for the monitoring of the molecular epidemiology of poliovirus from 2009 to 2017, and of Measles and Rubella viruses from 2009 up to now, she is responsible of work supervision, writing SOPs, training the staff, analyzing data and sequences and contacting WHO and CDC for the management of reagents and results. She is also engaged in the diagnosis and research of hepatitis viruses. Since March 2020 up to now, she is engaged in the COVID-19 diagnostic. She is also supervising master degree students in the field of hepatitis and enteroviruses. In addition, she is International Professional in biorisk management (certified by IFBA in September 2016 for biorisk management and biosecurity in January 2019) and a WHO trainer on Biorisk Management. In addition, She is member and co-founder of the Tunisian Biosafety Association ATB2E, and member of the institutional biorisk management committee.

Publications

1.Identification of two novel hepatitis C virus subtype 2 from Tunisia (2v and 2w)

2.Circulation and Molecular Epidemiology of Enteroviruses in Paralyzed, Immunodeficient and Healthy Individuals in Tunisia, a Country with a Polio-Free Status for Decades.

3.Focus on hepatitis C virus genotype distribution in Tunisia prior to elimination: a 16-year retrospective study

4.First whole genome sequences and phylogenetic analysis of SARS-CoV-2 virus isolates during COVID-19 outbreak in Tunisia, North Africa.

5.Hepatitis viruses take advantage of traditional practices to increase the burden of hepatocellular carcinoma in Tunisia

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