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Surveillance Highlights

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Acute flaccid paralysis: A call for clinical vigilance

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CLINICAL VIGNETTE

A previously healthy, 3-year-old male presented to a paediatric emergency department. His parents described a mild illness with low-grade fever, sore throat, headache, and asymmetric weakness in his legs, especially on the left. The paediatrician could not elicit deep tendon reflexes of the left knee. She thought his neck might be a bit stiff. The family had returned from visiting friends and family in Pakistan 6 days prior. The child was unvaccinated. The paediatrician spoke to a paediatric neurologist and organized magnetic resonance imaging and then a lumbar puncture. She considered poliovirus infection in her differential diagnosis and immediately notified the local public health unit of a possible case. The child was admitted to a private room with routine and contact precautions.

Given the suspicion of poliovirus infection, samples were sent to the National Microbiology Laboratory (NML) for testing. Two stool samples were collected at least 24 hours apart for poliovirus testing. Poliovirus testing was negative, and the patient was diagnosed with Guillain-Barré syndrome. The case was reported to the local public health unit and to the Canadian Paediatric Surveillance Program. A neurological follow-up was scheduled 60 days following the onset of paralysis/weakness.

LEARNING POINTS

- Polio (poliomyelitis) is a highly infectious disease caused by an enterovirus, primarily transmitted through the fecal-oral route. Paralytic polio can result from either wild or vaccine-derived poliovirus. Vaccine-derived poliovirus originates from the oral polio vaccine (OPV). The OPV viruses are shed in the stool for several weeks and, in under-immunized populations, can slowly mutate and revert to a form that causes paralysis. The OPV has not been used in Canada since 1996 but is still used in many other regions of the world.
- Polio is targeted for eradication. As of 2024, wild poliovirus transmission remains endemic only in Pakistan and Afghanistan, although several countries are experiencing outbreaks of vaccine-derived polio (1). Acute flaccid paralysis (AFP) surveillance is the cornerstone of monitoring for polio and is critical for documenting the absence of poliovirus circulation required by the World Health Organization (WHO) for countries to declare polio-free status. Surveillance of AFP in Canada is a longstanding collaborative effort between the Canadian Paediatric Society and the Public Health Agency of Canada. For more information on the AFP study protocol, please visit the following website: https://cpsp.cps.ca/surveillance/study-etude/acute-flaccid-paralysis.
- In Canada, polio has been eliminated since 1994. In 2023, over half of reported AFP cases (14/24, 58%) were diagnosed with either Guillain-Barré syndrome or transverse myelitis (2). No AFP cases were suspected to be poliomyelitis. However, as long as poliovirus continues to circulate in different parts of the world, and the OPV continues to be used, there remains a risk of polio importation into Canada. Continued active monitoring for poliovirus is critical until global polio eradication is achieved.
- The detection of vaccine-derived poliovirus in wastewater in Quebec, Canada in August 2022 genetically related to detections in the UK, the USA, and Israel (3) serves as a critical reminder that Canada remains at risk of poliovirus importation and potential circulation. This highlights the importance of maintaining a sensitive and active

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surveillance system that allows for prompt and appropriate investigation of AFP cases to detect polio.

- Polio should be considered in all patients presenting with AFP. Factors that may increase suspicion for poliomyelitis include recent travel to areas with known wild or vaccine-derived poliovirus circulation, contact with travellers from such regions, belonging to or travelling to a community with a large unimmunized population, or being unvaccinated or under-vaccinated (4).
- If poliomyelitis is suspected, consultation with a neurologist and an infectious disease specialist is strongly recommended. Report suspected cases to the local public health unit while waiting for laboratory confirmation. Collect two stool samples at least 24 hours apart for viral testing. Samples should be sent to the NML for testing along with the Requisition Form for Enteroviruses. The NML is the only WHO Regional Reference Laboratory for poliovirus testing in Canada. For a list of the NML's services, please visit the following website: https://cnphi.canada.ca/gts/main.

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POTENTIAL CONFLICT OF INTEREST

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