Acute Flaccid Paralysis

Case Definition

Confirmed Case

Acute onset of focal weakness or paralysis characterized as flaccid (reduced tone) without other obvious cause (e.g., trauma) in children < 15 years old, including Guillain Barré Syndrome. Transient weakness (e.g. postictal weakness) should not be reported.

Probable Case

Not applicable.

NOTE: The Expert Working Group on Polio Eradication has recommended that surveillance of AFP remain with the Canadian Pediatric Surveillance Program (CPSP). CPSP is undertaken by the Canadian Pediatric Society under contract with Population and Public Health Branch, Health Canada.

NOTE: The elimination of indigenous wild poliovirus transmission in Canada, and the rest of the American region, was certified in September 1994. However, until global polio eradication is attained, there remains an ongoing risk of wild poliovirus importation from polio-endemic regions to Canada. Consequently, active surveillance of acute flaccid paralysis (AFP) in children less than 15 years is used to monitor potential cases of paralytic poliomyelitis. Based on the World Health Organization (WHO) criteria for AFP, the estimated minimum number of cases in Alberta is 6 cases per year.

The objective of AFP surveillance is to identify AFP cases (including Guillain-Barré Syndrome [GBS]) in children less than 15 years of age to rule out paralytic poliomyelitis and thereby monitor the polio-free status in Alberta.

Reporting Requirements

1. Physicians/Health Practitioners and others

Physicians, health practitioners and others listed in Section 22 of the *Public Health Act* shall notify the MOH (or designate) in the prescribed form by mail, fax or electronic transfer within 48 hours (two days) about the following:

- all clinical cases should be considered as confirmed (see case definition).

The Public Health Agency of Canada requests that the physician caring for the case completes the Canadian Paediatric Surveillance Program (CPSP) Acute Flaccid Paralysis Reporting form.

2. Regional Health Authority

- The MOH (or designate) shall forward the preliminary NDR of all clinical cases to the CMOH (or designate) within two weeks of notification and the final NDR (amendment) within four weeks of notification.
- For out of region reports, the MOH (or designate) first notified shall notify the MOH (or designate) where the case resides by mail, fax or electronic transfer and fax a copy of the positive laboratory report within 48 hours (two days).
- For out of province and out of country reports, the following information should be forwarded to the CMOH (or designate) by phone, fax or electronic transfer within 48 hours (two days) including:
  - name,
  - date of birth,
  - out of province health care number,

- out of province address and phone number,
- attending physician (locally and out of province), and
- positive laboratory report (faxed).

Etiology

Acute Flaccid Paralysis (AFP) may be caused by a number of agents including 'enterovirus', 'echovirus' or 'adenovirus'. Acute West Nile infection and campylobacter have also been associated with AFP.

Clinical Presentation

Focal weakness or paralysis characterized as flaccid (reduced tone) without other obvious cause (e.g., trauma) in children less than 15 years old.

Diagnosis [1]

AFP surveillance is conducted in an attempt to identify cases of AFP (including GBS, transverse myelitis, myelopathy, West Nile Virus infection, etc.) and to investigate all reported cases for evidence to rule out or to confirm paralytic poliomyelitis. Refer to the link for details. http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/98vol24/dr2404ea.html

The following are considerations to determine the causative agent and rule out or confirm polio:

- Stool samples
  - Collection of one stool sample within two weeks (up to six weeks) after the onset of paralysis for:
    - viral studies, and
    - campylobacter.
  - A rectal swab is acceptable in the absence of a stool sample.
- Serum samples
  - Sample should be collected immediately for polio serology.
  - A second serum specimen should be collected two weeks later if the patient presents in the acute phase of the illness, or one month later if the patient presents in the convalescent phase.
  - Samples should be tested in parallel for poliovirus antibody titres and polio-specific IgG and IgM evaluations.
- Nasopharyngeal swabs and CSF may be collected to assist with the investigation.
- All samples should be sent to PLPH and may be forwarded to the National Reference Centre for Enteroviruses (National Microbiology Laboratory, Winnipeg, Manitoba) for further investigation when needed.
- Neurologic investigations, as appropriate, should take place (electromyography, nerve conduction studies, MRI, CT).

Epidemiology

Reservoir

This will depend on the etiologic agent.

Transmission

This will depend on the etiologic agent.

Incubation Period

This will depend on the etiologic agent.

Period of Communicability

This will depend on the etiologic agent.

Host Susceptibility

This will depend on the etiologic agent.

Occurrence

General [1, 2]

The objective of AFP surveillance is to detect poliovirus wherever it may still circulate. This is the key to identifying areas which may require supplementary polio immunization. In 1999, nearly 30,000 AFP cases were reported globally up from just over 24,000 in 1998. The WHO has estimated that there is an annual incidence of one case of AFP per 100,000 population less than 15 years old,

in the absence of wild poliovirus transmission.

Canada [2, 3, 4, 5, 6]

The last case of reported wild paralytic polio in Canada occurred in 1977. There have been paralytic and non-paralytic cases of polio reported since that time but all have been associated with wild virus importation. The active surveillance of AFP in children less than 15 years old has played an important role in monitoring suspected cases of paralytic polio. It has also provided evidence of the elimination of indigenous wild poliovirus transmission in Canada.

Active surveillance for AFP in children less than 15 years old began through IMPACT in 1991 to screen for potential cases of poliomyelitis following the certification of Canada as polio free. Since 1996, CPSP has carried out surveillance based on voluntary reporting by physicians/pediatricians and IMPACT. With the introduction of the AFP surveillance through CPSP the number of cases increased steadily from 1996 to 1999 (24, 33, 42, and 61 respectively). Of the 61 cases reported in 1999, polio immunization was age-appropriately received in slightly more than half of the cases (52.5%), incomplete for age in 9.8%, and not documented in 37.7% of reported cases. Children aged six to 10 accounted for 37.7% of cases.

In 2000, there were 61 confirmed cases of AFP reported in Canada. Children aged less than one year accounted for 1.6% of cases (one case); children one to four years accounted for 39.3% of cases (24 cases); children aged five to nine accounted for 36.1% of cases (22 cases); and children 10 to 14 accounted for 23% of cases (14 cases). Forty-three cases were males and 18 were females.

The numbers decreased slightly in 2001 (54 cases). The cases ranged in age from seven months to 14.9 years. One third of the reported cases were in children two to five years of age. Males accounted for 52% of cases. Twenty-seven cases had documentation of having received any polio immunization. Twenty-five had received age appropriate polio immunization. One case had no vaccination. No vaccine-specific information was available on the remaining 25 cases.

In 2002, 39 cases of AFP were reported by CPSP. Cases ranged in age from five months to 13.6 years. Children aged two to five years accounted for 41% of reported cases. Females accounted for 54% of cases. Twenty of the 39 cases had documentation of routine immunization and 19 of these had age-appropriate polio immunization. The remaining 19 cases had no vaccine-specific immunization reported.

Between 1996 and 2002, the final diagnosis in more than 85% of Canadian cases reported was listed as GBS, transverse myelitis or encephalitis/encephalopathy. None of the clinical specimens tested were positive for poliovirus infection.

Alberta [3]

AFP became reportable in Alberta in June 2002, however, surveillance had been carried out since 1996 through the CPSP and IMPACT. Pediatricians are mailed a request (monthly) from CPSP for information and thus, cases are reported to CPSP. A total of 32 AFP cases have been reported through the

CPSP-IMPACT surveillance system in Alberta from 1996 to the end of November 2003. (1996 – one, 1997 – two, 1998 – one, 1999 – seven, 2000 – eight, 2001 – five, 2002 – three, 2003 [Jan – Nov] – five). Although no specific information is available on these cases, CPSP reports that no clinical specimens have tested positive for poliovirus infection. (P Varughese, personal communication, November 26, 2003) (A Medaglia, personal communication, April 28, 2003)

Key Investigation

Single Case/Household Cluster [1, 7]

- Investigation is done to rule out paralytic polio.
  - Determine polio immunization status (total number of doses of oral and/or inactivated polio vaccine received).
  - Obtain relevant medical history including immunocompromised status or abnormal neurological history.
  - Determine receipt of oral polio vaccine (OPV) within 30 days prior to the onset of current illness.
  - Determine receipt of any other immunization within 30 days prior to the onset of current illness.
  - Identify household members or other close contacts who have received OPV within 30 days prior to the onset of this child's illness.
  - Determine travel to or residing in another country seven to 60 days prior to the onset of illness.
  - Identify household members or other close contacts who have traveled to or resided in another country seven to 60 days prior to the onset of this child's illness.
  - Assess for acute respiratory illness within 30 days prior to onset of current illness.
- Contacts include:
  - persons living in the same household or having close contact with the case (e.g., sharing sleeping arrangements, intimate relationships or playing together for more than four hours) within the 30 days before the case's onset of illness,
  - daycare and dayhome attendees, and
  - persons having contact with stool or fecal matter of the case within 30 days before the onset of illness without using infection control precautions (e.g., diapered children).

Control

Management of a Case [3]

- Management will depend on the etiologic agent, if one is identified.
- The majority of cases have been diagnosed as Gullian-Barré syndrome.

Treatment of a Case

- Treatment will depend on the etiologic agent, if one is identified.
- Supportive/symptomatic treatment.

Management of Contacts

- Management will depend on the etiologic agent, if one is identified.
- Contacts with incomplete polio immunization will be offered IPV.

Preventive Measures

- When possible and practical, IPV should be used as the immunizing agent.

References

1. Public Health Agency of Canada. *Protocol for the investigation of acute flaccid paralysis and suspected paralytic poliomyelitis.* Ottawa: CCDR 1998; 24-04. http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/98vol24/dr2404ea.html

2. Varughese P. *Acute flaccid paralysis: Study publication.* Canadian Paediatric Society. 2002. http://www.cps.ca/english/CPSP/Studies/acute.htm

3. *Acute flaccid paralysis.* Canadian Paediatric Society. Canadian Paediatric Surveillance Program. Surveillance Studies in 2002:15–18. http://www.cps.ca/english/CPSP/index.htm

4. *Acute flaccid paralysis.* Canadian Paediatric Society. Canadian Paediatric Surveillance Program. Surveillance Studies in 2001:16–19. http://www.cps.ca/english/CPSP/index.htm

5. Grenier D, Medaglia A, Doherty J. *Congenital rubella syndrome (CRS), subacute sclerosing panencephalitis (SSPE) and acute flaccid paralysis (AFP): Relationship of frequency to vaccine status.* Canadian Paediatric Surveillance Program. Canadian Paediatric Society and Centre for Infectious Disease Prevention and Control, Health Canada. Ottawa 2001./http://www.cps.ca/english/CPSP.Abstract/abstractCRS.htm

6. Public Health Agency of Canada. *Notifiable Diseases On-Line – Acute flaccid paralysis, 2000.* December 2003. http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/disease2/actflacpara_e.html

7. *Acute flaccid paralysis reporting form*: (AFP 97-01). Canadian Paediatric Surveillance Program. January 1997.