

DEFINITION

1. Poliomyelitis is an acute infective disease due to a virus with a predilection for the anterior horn cells of the spinal cord and the motor nuclei of the brain stem. It is now rare in developed countries, due to the success of immunization.

CLINICAL MANIFESTATIONS

2. In the acute illness, there is evidence of a general reaction to the infection throughout the body as well as in the nervous system where inflammatory changes particularly affect the grey matter of the spinal cord and medulla. During recovery, ganglion cells which have not been too severely damaged are restored to normal. Others disappear completely leaving a paucity of cells in the affected regions with secondary degeneration in the corresponding ventral roots and peripheral nerves. The affected muscles show varying degrees of neurogenic atrophy.
3. Infected persons may react in different ways -
 - 3.1. In sub-clinical infections, immunity develops without any overt symptoms of illness.
 - 3.2. In abortive cases, symptoms and signs of mild general infection may develop and recover without any obvious involvement of the central nervous system. Such cases are indistinguishable from any general infection unless virological studies are made.
 - 3.3. The state of general infection may progress, sometimes after temporary improvement, to a condition in which involvement of the nervous system is obvious. There may be increased fever and headache, neck rigidity and meningism. The cerebro-spinal fluid shows an excess of cells. Recovery may occur without paralysis developing, such cases being termed meningitic or non-paralytic.
 - 3.4. Paralysis occurs in a minority of cases and usually appears while the constitutional disturbance is at its height, within a few days of the start of the illness. It may be widespread or localized and usually reaches its maximum within 24 hours. Rarely, localized paralysis may occur with little previous constitutional illness. The lower limbs are affected more than the upper and involvement of respiratory muscles may require assisted respiration.
4. Not all muscles which have been affected remain permanently paralysed. The disease causes temporary loss of function in many motor neurones which ultimately recover. Improvement usually begins at the end of the first week after the onset of paralysis and may be expected to continue for a year or more.
5. In later life, the disabling effects of the paralysis may increase because of the superimposition of the effects of ageing.

6. Some patients who partially or fully recover from paralytic poliomyelitis experience a new onset of slowly progressive muscle weakness, pain, atrophy and fatigue some 25 to 40 years after the original infection. This is termed postpolio syndrome. Typically the muscles involved are the same as those originally affected, although it may occur in previously unaffected limb muscles. The exact cause is unknown, although it is believed that this late progression of muscle weakness is due to the normal, age-related attrition of motor nerve units in muscles already less well supplied as a result of the original infection.

AETIOLOGY

7. Three strains of poliomyelitis virus have been recognized with differing degrees of virulence and they have been demonstrated in pharyngeal secretions, in faeces, in sewage and on flies caught in the neighbourhood of infected cases.
8. Personal contact and faecal contamination of food appear to be the principal mode of transmission, the incubation period being usually from 7 to 14 days but possibly as long as 5 weeks.
9. Most cases occur in infancy, the rest of the community acquiring immunity so that the disease rarely affects older people.
10. The pharynx is a common portal of entry for the virus and it is accepted that infection may occur more readily soon after tonsillectomy.
11. There is good evidence to show that excessive physical exertion during incubation may predispose to paralysis, particularly in the muscles most used. Similarly, paralysis may develop primarily in a limb which has been traumatized, for instance by injections.

CONCLUSION

12. Poliomyelitis is a viral infection which may cause permanent muscular paralysis but which, in the majority of cases, recovers completely. Where there is residual paralysis, its severity varies widely between cases. The onset of paralysis may be affected by local trauma or by strenuous exercise in the incubation period. A number of patients develop further very gradual motor deterioration later in life.

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