

Polio Australia

Improving health outcomes for Australia's polio survivors

The Late Effects of Polio: Do you know the signs?

Pathophysiology of the Late Effects of Polio (LEoP)

Acute poliomyelitis (polio, also known as 'infantile paralysis') is a viral infection affecting the nervous system. It can infect both the central and the peripheral nervous system, but the most common infection is in the anterior motor horn cells, resulting in flaccid paresis of the muscles. This can present as a widely variable distribution of weakness in skeletal and bulbar musculature, with residual impairment and paralysis ranging from minor muscle weakness to total paralysis requiring intervention such as ventilation.

After motor-neuron destruction during the acute polio phase, surviving motor units sprout axons to reinnervate the denervated or 'orphaned' muscle fibres. This process of denervation and reinnervation is ongoing over the muscle lifespan. As a consequence, polio-affected muscles have oversized motor units and increased muscle-fibre density. It is thought that these large motor units result in increased weakness as they 'drop out' due to ageing and/or overuse. Due to this process, people with LEoP may have experienced a prolonged period of stability of physical symptoms such as weakness and pain, often lasting several decades, before presenting to their primary care provider with what can feel like a resurgence of polio-like symptoms.

LEoP can present as a unique cluster of biomechanical and/or neurologic features in each individual, which can be moderated if properly assessed and managed. The LEoP are essentially a 'diagnosis of exclusion', but should be considered for clients/patients who are known to have had polio themselves — or other members of their family (which may indicate undiagnosed sub-clinical damage). The LEoP refer to any of the following features.

Musculoskeletal features

- Decreased muscle endurance and muscle fatigue
- Overuse of compensatory muscle groups
- Muscle pain and/or spasms
- Joint pain and/or degeneration such as arthritis
- Biomechanical deformity such as kypho-scoliosis
- Muscle contracture
- Osteopenia or osteoporosis

Neurological features

- New muscle weakness
- Muscle atrophy
- Preservation of sensation irrespective of muscle loss
- Muscle twitching/fasciculation
- Compression neuropathy

Respiratory features

- Shortness of breath due to chest deformities
- Respiratory insufficiency due to sleep apnoea
- Weakening respiratory muscles
- Hypoventilation due to early damage to the respiratory control centre

Bulbar features

- Impaired thermoregulation
- Dysphagia/swallowing problems
- Dysphonia/vocal dysfunction
- Dysarthria/unclear speech
- Chronic fatigue, headaches, poor concentration

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The Late Effects of Polio: General Information

Additional considerations

- Biomechanical problems
- Bladder dysfunction
- Weight gain due to decreased mobility
- Oedema
- Psychosocial concerns due to increasing disability
- Pre and post-planning for surgical procedures

Comorbidities

- Cardiovascular disease
- Endocrine and metabolic diseases
- Chronic pulmonary disease
- Hip and limb fractures due to falls

Supporting factors

- Actual or suspected history of poliomyelitis
- A period of partial or complete functional recovery after acute infection, followed by an interval of stable neurologic function
- Symptoms persist for at least a year
- Exclusion of other neurologic, medical and orthopaedic problems

Factors NOT supportive of the LEOp condition

- Resting tremour of limbs or head
- Worsening peripheral neuropathy
- Dizziness or vertigo
- Numbness
- Problems with sensory organs
- Primary altered sensation

LEoP Health Team

- General Practitioner
- Rehabilitation Specialist
- Neurologist
- Physiotherapist / Occupational Therapist
- Orthotist / Podiatrist
- Respiratory / Sleep Specialist
- Speech Pathologist
- Dietitian / Nutritionist
- Osteopath / Massage Therapist
- Psychologist / Social Worker

More information

Polio Australia's www.poliohealth.org.au website contains resources for health professionals including clinical practice publications, post-polio research papers, and the Health Professionals Register for referral or further consultation.

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