CLINICAL VIGNETTE

Post-Polio Syndrome: A Remnant of the Past

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Introduction

Poliomyelitis is a potentially life-threatening viral infection. While it has been largely eradicated in developed countries since the conception of the polio vaccine in 1955,[1] it is estimated post-polio syndrome (PPS) still affects 12-20 million people around the world.[1,2]

Polio infection has a wide range of severity from asymptomatic carriers to mild flu-like symptoms characterized by fevers, pharyngitis, fatigue, nausea, abdominal pain, and headache. Symptoms usually resolve in a matter of days. However, in its most severe form, it involves the central nervous system and can attack motor neurons causing severe muscular pain and paralysis. In less than 1% of patients, it can cause autonomic dysfunction, encephalopathy, respiratory insufficiency, or death.[3]

In those with acute flaccid paralysis, approximately two-thirds have long-term disabilities.[1] The degree of residual weakness is usually proportional to the severity of acute symptoms. Post-polio syndrome is characterized by the onset of worsening disabilities after "a period of prolonged stability."[1] Symptoms include muscle atrophy, fatigue, pain, and weakness. This can manifest as functional limitations including respiratory deficiencies, sleep disorders, and significant worsening of pre-existing disabilities.

For current physicians, post-polio syndrome may be the only remnant of the pandemic that we will encounter. It is important that physicians are well-versed in the specific management of this disease.

Case

A 56-year-old Chinese female presented to her primary care physician complaining of right lower extremity atrophy and weakness, particularly in her thigh. The atrophy had first started as a teenager but had remained stable until her early 50s. Over the last 3-4 years her symptoms had progressively worsened. She noted difficulty climbing stairs and was now using her left leg to support herself. She had occasional involuntary contractions and spasms in the leg. She was not using any assistive devices. Furthermore, she had occasional numbness in the legs as well as a mild foot drop. She denied any weakness or numbness in the upper extremities or respiratory symptoms. Her medical history was notable for polio infection as an infant. She noted initial atrophy as a teenager in China and had been diagnosed with post-polio syndrome at that time.

On examination, she had normal mental status and cranial nerve function. Motor examination revealed fasciculations in the bilateral quadriceps and right gastrocnemius. There was decreased bulk and tone in the right lower extremity, most prominent in the quadriceps and calf. Muscle strength exam was 3/5 for hip flexion, 4/5 gluteus muscles, 2/5 quadriceps, 4/5 hamstrings, and 3/5 plantar flexion. Sensation to light touch was diminished in the right thigh, calf, and dorsal foot. She had difficulty with tandem gait. The rest of her neurologic, cardiovascular, and respiratory exam was unremarkable.

MRI of the lumbar spine showed no radiculopathy but showed mild facet hypertrophy at L4-L5 with minimal bilateral foraminal stenosis. EMG/NCS showed no evidence of superimposed peripheral neuropathy and confirmed denervation-reinnervation changes consistent with post-polio syndrome.

The patient was evaluated by neurology who confirmed the diagnosis and initiated physical therapy (PT) and aquatic therapy. An orthotic leg brace was also ordered. After 4 months of therapy, the patient was discharged from formal PT and continued home exercises with stabilization of symptoms.

Discussion

Post-polio syndrome is defined as the new onset of neurologic symptoms occurring after several years of symptom stability after the acute polio infection. Symptoms can include new muscle atrophy, fatigue or pain, muscle weakness, cold intolerance, sleep problems, dysphonia or dysphagia, and respiratory compromise. Diagnostic criteria include a documented history of acute poliomyelitis infection; stability or recovery of neurologic symptoms after acute infection followed by neurologic stability (usually lasting at least 15 years); recent onset of progressive muscle weakness; and at least two of the following symptoms: excess fatigue, myalgia or arthralgia, muscular atrophy, cold intolerance as well as exclusion of other pathology.[4]

Effective treatment of post-polio syndrome involves a multidisciplinary approach. Physical therapy includes muscle training to prevent atrophy and stiffness and improve endurance. Graded exercises are used to prevent worsening weakness and muscle fatigue.[2] Aquatic exercises can help with improving range of motion and pain reduction. Acupuncture and transcutaneous electrical nerve stimulation (TENS) have been shown to help pain.[4]

Medication to treat neuropathic pain, restless leg syndrome, and sleep disturbances can be utilized to treat sequelae of polio. Speech therapy can help with symptoms of dysphagia and dysphonia.

For patients with respiratory compromise, particular attention should be placed on the prevention of chest infections. This includes routine influenza and pneumococcal vaccinations and tobacco avoidance. Maintaining healthy weight helps improve mobility and avoid obstructive sleep apnea and obesity associated hypoventilation.

Conclusion

While the complications of acute poliomyelitis infection are well-known, post-polio syndrome can affect patients years after their initial infection. Is it important physicians are aware of this phenomenon and well versed in its management.

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