

The opinion of 67% of the respondents that nurses will continue to be lost to foreign countries unless determined efforts are made to motivate them calls for serious consideration and action. This is necessary because of the great danger which the efflux of nurses poses to the health system of the country. To this end, the issues raised in the present study e.g. poor salary, recognition of additional certificates, credit for work done etc should be addressed.

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REVIEW ARTICLE

The Post Polio Syndrome

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Introduction

Poliomyelitis is an inflammatory disease caused by viral infection of the anterior horn cells of the spinal cord, it is recognized clinically as an acute onset lower motor neuron paralysis (or paresis) of one or more muscles¹. Infection is oral and the virus multiplies in the gut for one to three weeks when it is either contained by an immune response or a viraemic phase occurs. The virus is excreted in the faeces for a number of weeks and in saliva for some days. The inactivated polio vaccine developed by Jonas Salk has been available since 1955, and the attenuated live oral vaccine developed by Albert Sabin² since 1962. Paralytic poliomyelitis was a major cause of morbidity and death throughout the world during the first half of the 20th century². Thompson³ estimated that the polio vaccination programs, which cost about \$35 billion from 1955 to 2005, averted more than 1.1 million cases of the disease and more than 160,000 deaths. Although the polio epidemics of the twentieth century may be history, the reality is that millions of people are already living with the consequences of having had the disease⁴. The World Health Organization reported that there are about 20 million polio survivors worldwide with about 60,000 of them below the age of six⁴. Cases of polio are no longer common, but there are people with polio paralysis and post polio syndrome⁴. Today, polio remains endemic in only four countries Nigeria, Pakistan, Afghanistan and India⁵.

Summary of Classic Phases in Polio⁶

(1) Acute Paralytic Polio

Acute spinal polio is characterized by asymmetric paralysis of muscles served by motor units originating in spinal cord anterior horn cells which have been damaged or killed by the polio virus. This

paralysis is often very sudden and sometimes very severe, usually involving the lower limbs and is often maximal after 48 hours. There is also a bulbar form of acute polio which causes paralysis of respiratory muscles and those of deglutition, which has a particularly high mortality and frequently requires assisted ventilation. During the acute phase of polio, strict bed rest could be used to prevent further spread of paralysis and intramuscular injection should be avoided.

(2) Recovery Phase

The recovery phase of polio requires that "orphaned" muscle fibres become re innervated by axon sprouts and large numbers of hypertrophied muscle fibres may be innervated by small number of overworked surviving neurons. Some muscle fibres and groups of muscles may never be re innervated and the remaining muscle groups will compensate by hypertrophying and working very much harder.

(3) Stable Disability

Polio was described as a chronic, yet stable disease with a period of stable disability following rehabilitation in the recovery phase, the severity of disability varies greatly from almost imperceptible muscle weakness to significant weakness leading to reduced mobility and from no bulbar problem to intermittent dependence on assisted respiration. Post Polio Syndrome (PPS) refers to the late development of new neuromuscular symptoms in previously stable poliomyelitis patients usually ten to forty years after the acute polio infection^{7,8}. It is mainly characterized by a new weakening of muscles that were previously affected by the polio infection and also of muscles that were seemingly unaffected. Polio is considered to be a chronic but stable disease once the acute phase is over and rehabilitation has restored a lesser or greater degree of function. However, it is now known that some survivors of polio develop new symptoms after

many decades of stable functioning. The first description of new muscle weakness in polio survivors, developing years after the initial illness, were published by the great French neurologist Charcot in 1875⁹. It was not until the 1980s that the post polio syndrome was widely acknowledged. The term Post Polio Syndrome (PPS) was first used at the first international post polio conference at Warm Springs, Georgia in 1984¹⁰.

Aetiology

There is no definite explanation for the new symptoms associated with PPS but the most widely accepted theory is that of neuron fatigue^{7,8}. In this theory, it is assumed that many motor neurons were destroyed by the original infection, leaving small numbers of overworked neurons to innervate many (orphaned) muscle fibres. With time and over use, these few working neurons simply wear out leaving muscles denervated¹¹. Proposed aetiologies include motor unit dysfunction, degenerative change within motor units, muscle overuse, muscle underuse, less of motor units due to age, growth hormone or other hormonal effects and the combined effects of disuse, overuse, pain, weight gain or other illness.

Symptoms

A statistical summary of the clinical characteristics of several series of PPS patients is as follows⁸.

1. Fatigue, pain and weakness are almost always present- fatigue (89%); Pain in muscle or joint (80%); new weakness (83%) in previously symptomatic (69%) or asymptomatic (50%) muscle.
2. New Atrophy (28%). This equates to Post Polio Muscular Atrophy (PPMA)
3. Difficulties in the activities of daily living (78%) functional loss. Walking (64%); Climbing Stairs (61%); Dressing (17%).

Additional presenting problems include pulmonary dysfunction, sleep disorders, Dysphagia, cold intolerance, degenerative arthritis, social and psychological problems¹². The cardinal symptom is new weakness¹².

Diagnosis

Post Polio syndrome is a diagnosis of exclusion that is based on a thorough history and physical examination. It may be diagnosed in a patient if the following are found⁸.

- i. Evidence of prior paralytic polio via EMG, an appropriate history or characteristic

residual atrophy.

- ii. Period of apparent stability before any new symptoms. New symptoms may often be seen after an illness or injury.
- iii. Exclusion of other conditions (especially motor neuron diseases and overuse syndromes).

Physiotherapy

There is no medical or pharmacological treatment of choice for PPS but there are many ways of managing polio related difficulties, which should be symptom specific and involve a multidisciplinary team¹³. However, physiotherapy is a cornerstone of management of prior polio and post polio syndrome. There is an increasing evidence base for the effectiveness of physiotherapy in alleviating PPS associated physical problems¹⁴. Patients with prior polio or post polio syndrome should have access to regular physiotherapy assessment, and treatment should be made available when needs are identified. These needs are likely to change with time, thus patient centered, lifelong physiotherapy is recommended.

The following outcome measures have been used in research involving post polio patients and may be of use in assessment. The Rivemead Mobility Index¹⁵, Dynamometry Maximum Voluntary Isometric Contraction (MVIC)¹⁶ Timed Walk¹⁷. Physiological Cost Index¹⁸, Nottingham Health Profile¹⁹ Visual analogic Scales for pain and fatigue²⁰. Fatigue seventy scale¹⁷, Short Form Health Survey (SF 36). Recent studies have found that appropriate, carefully monitored exercise programs can be of benefit to post polio patient²⁰.

The intervention that may alleviate pain includes

- ! Identification of the cause of pain
- ! Modification of activity levels
- ! Weight reduction
- ! Use of aids and appliances to relieve or support weak muscles and joints.
- ! Use of Electrophysical agents e.g. heat and transcutaneous electrical nerve stimulator (tens).
- ! Stretching Exercises / Strengthening exercises
- ! Postural re education
- ! Correction of gait problems
- ! Hydrotherapy Exercise

Aids and appliances should be provided with the aim of improving abnormal body mechanics correcting

and minimizing postural and gait deviations mechanically.

Conclusion

In conclusion, patients with prior polio or post polio syndrome present with complex physical problems. Physiotherapy treatments enumerated above would have a long term beneficial effects in maintaining such patients at optimum physical performances.

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