Post-Polio Syndrome, described as weakness and atrophy in skeletal muscles, occurs when there is a failure in capacity of a nerve cell body to maintain large motor units. The large motor units are supported when the capacity for re-innervation is greater than denervation. Eventually this mechanism reaches an upper limit leading to muscle weakness. The cause of the denervation is unknown at the moment.

An ongoing inflammatory process in the central nervous systems of post-polio patients has been described in some studies, but has not been found in other studies.

Our study in 2002 found an increase of cytokine production in the central nervous system of post-polio patients.

We know that:
- Cytokine levels are greater when there is an inflammation.
- Cytokine levels are higher in people with multiple sclerosis (MS), a known neuroinflammatory disorder.
- The level of the increase in the post-polio patients was almost the same as in the MS patients.

We checked older studies to see what work had been done:
- Dinsmore reported an effect of prednisone in high doses and the effect eroded as the doses were lowered.
- Ann Bailey, MD, at Warm Springs, Georgia, in the early 80s, treated 80 patients with the oral vaccination, and 50 of those patients reported a positive effect on their symptoms.*

Due to her results and to the pattern of the cytokine increase, we began an open, uncontrolled study using intravenous immunoglobulin (IVIG) in 16 post-polio patients. We were able to down modulate the cytokines, but what is the gain for the patient? We next developed a multi-center placebo-controlled study, double-blinded in 135 post-polio patients. (In the former study, we used 90 grams of IVIG; 30 grams daily for 3 days.) In this study, we used 30 grams for 3 days, repeated twice. We noted an increase of muscle strength of 4.3% in the post-polio patients. In the placebo group, muscle strength was decreased by 5.7%. This was statistically significant. The natural course of decrease in strength was 5.7% in one-half year.

The benefit: Post-polio patients selected for the study had an increase in cytokine levels, indicating inflammation in the central nervous system. The inflammation was down-modulated by the intravenous immunoglobulin (IVIG) and down-modulated inflammation led to increased muscle strength and should result in a better quality of life.

* Using oral polio vaccine to treat PPS is not an accepted practice.

References