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Question: *Can a Grade 3 concussion cause the onset of post-polio syndrome (PPS)? I developed the symptoms during recovery from a concussion and have been diagnosed as having PPS.*

A: Regarding your question about a Grade 3 concussion (the most serious level): After headaches and cognitive problems (poor concentration, attention and memory), fatigue is one of the most common post-concussion symptoms. Frequently, it is reported as “very low energy for doing anything” and “feeling exhausted after doing nothing.” A need to sleep 12 to 16 hours per day is common. When a polio survivor has a serious concussion, these symptoms may mimic those of PPS or aggravate mild, non-distressing fatigue present before the head injury. If an individual’s usual activity level is seriously reduced due to post-concussion fatigue and/or other symptoms for more than a few days, disuse weakness and fatigue can rapidly develop.

This type of new weakness and fatigue may, in fact, be no different than “typical PPS” new weakness and fatigue. However, it does have an other explainable cause (diagnosis) for developing, and therefore does not meet the most commonly accepted definition for PPS (*March of Dimes. Post-polio syndrome: identifying best practices in diagnosis and care, www.marchofdimes.com/files/PPSreport.pdf*). Regardless of what it is called, it is especially important for a polio survivor whose PPS symptoms begin after a concussion to enter a comprehensive

rehabilitation program that includes appropriate, individually prescribed exercise. A well-designed exercise program undertaken over several months has an excellent chance of restoring function to pre-injury levels and essentially resolving PPS.

Question: *Are there any nutritional issues that polio survivors should pay special attention to? Are there any particular dietary needs or concerns? Any supplements that are beneficial?*

A: There are several important nutritional issues for people who had polio. No other issue is more important to good health than optimal nutrition, and no other is more controversial and little studied by good science.

The first issue is how to avoid excessive weight gain and obesity. Minimizing all refined sugars and grains is probably most important, particularly high fructose corn syrup which is now very widely used in processed foods and sodas. Portion control is also a central issue. Polio survivors are especially challenged to control weight and avoid developing type 2 diabetes (insulin resistance) because of their reduced muscle mass and limitations to vigorous exercise. Muscle tissue is the most important user of sugar and insulin in the body, and when there is less muscle to use, it is harder to keep blood sugar levels stable.

A second important nutritional issue is avoiding excessive sodium intake because it can increase the risk of hypertension (high blood pressure). Polio survivors have a

higher risk of hypertension, again because of decreased tolerance for aerobic exercise. Another special challenge is achieving healthy cholesterol levels and lipid profiles. It is more difficult to maintain high levels of good (HDL) cholesterol and low levels of bad (LDL) cholesterol without high levels of aerobic activity.

Additionally, a number of people, including polio survivors, cannot safely tolerate statin medications that are widely prescribed for cholesterol lowering. Many limit their intake of meat, dairy and eggs because of concerns about cholesterol, but this may leave them deficient in some essential fat-soluble vitamins only found in animal products, as well as low on essential amino acids. These amino acids and vitamins are critical to optimal muscle functioning, and polio survivors may be more sensitive to any relative deficiencies in these substances. Therefore, modest consistent intake of animal products is recommended with fish, white meats and grass-fed beef probably best.

The last issue is prevention of deficiencies in various vitamins and minerals. Vitamin D deficiency is very common today and contributes, along with low calcium intake/absorption, to the high incidence of osteoporosis in the United States. Less commonly known is that vitamin D deficiency can increase muscle and joint

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► aches and pains, as well as lower energy levels – all common PPS symptoms. Vitamin D levels in the blood can now be readily measured and should be on survivors experiencing late effects of polio.

Adequate intake of B complex vitamins, especially vitamin B-1 (thiamine), vitamin B-6 (pyridoxine) and vitamin B-12/folic acid, are critical to nerve health and can be measured in the blood. Brewer's yeast and whole grains are excellent sources for insuring high levels of B vitamins, except B-12/folic acid, which must come from some meat intake. Fish is an excellent source of protein, the healthiest fats for a good lipid profile and a good source of vitamin D and vitamin B-12.

A high proportional intake of fresh vegetables and whole grains is recommended along with modest quantities of fruits and animal products. Organic foods should be considered since post-polio nerves may be more sensitive to the neurotoxic effects of pesticides. ▲

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