



Fatigue, Brain Stem Damage and Low Blood Pressure

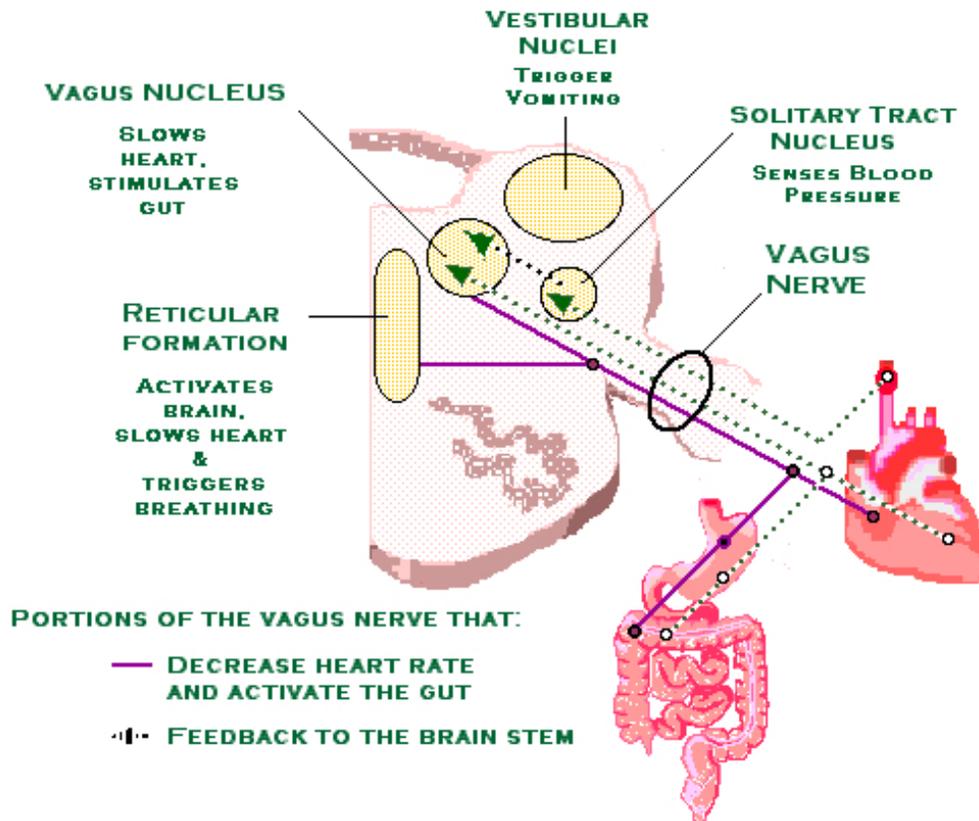
By Dr. Richard L. Bruno, HD, PhD
 Director, International Centre for Polio Education
www.postpolioinfo.com

The relationship between fatigue, brain stem damage and low blood pressure links polio survivors to another bunch of fatigued folk: those with Chronic Fatigue Syndrome.

Q. I had polio with weakness in my left leg. I recovered and carried on a normal life until the early 1990's when I started to have fatigue, heart palpitations, skipped beats, low blood pressure (especially after I eat) plus constipation. Should my doctor be considering a tie-in with polio?

A. Oh, yes! Fifty years ago polio pioneer Dr. David Bodian discovered that every polio survivor had some poliovirus-damage to neurons in the brain stem, the so-called "bulb" of the brain. When brain stem damage was severe "bulbar" polio was diagnosed whose icon, the iron lung, was needed when brain stem breathing-control neurons stopped working. But the most common symptom of "bulbar" polio was trouble swallowing, not trouble breathing. And some had severe difficulty controlling their blood pressure and heart rate, which was the leading cause of death in "bulbar" polio patients.

BRAIN STEM CENTERS DAMAGED BY THE POLIOVIRUS



The brain stem neurons damaged by the poliovirus that are responsible for the above symptoms control the vagus nerve, which carries commands from the brain stem to activate muscles in your throat, esophagus, stomach and intestines and also controls your heart rate and blood pressure. But the vagus nerve is a two-way street, since it also "listens" to activity in the gut, heart rate and also

your blood pressure (through stretch receptors called “baroreceptors” in your aorta and carotid arteries) and sends that information back up to the brain stem (see diagram above).

Vagus damage disrupting the normal functioning of the gut may explain our 1985 Post-Polio Survey findings that swallowing difficulty, diarrhea, colitis, ulcers and constipation are as much as six times more common in polio survivors than in non-polio survivors. And the other symptoms you describe may result from poliovirus-damage to the activity of brain stem vagus neurons controlling blood pressure and heart rate. For example post-polio patients can feel exhausted after a meal. When their stomachs fill with food, the vagus is apparently over-stimulated and triggers a drop in blood pressure and heart rate, causing feelings of fatigue and sometimes palpitations. Polio survivors also have been reporting another problem: food sticking in the upper esophagus behind the breastbone. We think this is due to the vagus not stimulating esophagus muscles to move the food downward. When food gets stuck, irritation triggers a painful esophagus muscle spasm that also stimulates the vagus nerve, causing blood pressure to drop and the heart to rate to slow.

Although blood pressure drops most polio survivors don't faint, which is consistent with our 1995 Post-Polio Survey finding that polio survivors do not faint any more frequently than those who didn't have polio. But the 1995 Survey did find that anyone who had fainted even once in their lifetime reported significantly more daily fatigue than those who never had fainted. This suggests that damage to brain stem blood pressure control and vagus nerve neurons may be coupled to poliovirus damage to bulbar “brain activating system” neurons, which our laboratory research suggests are responsible for post-polio brain fatigue.

The relationship between fatigue, brain stem damage and low blood pressure links polio survivors to another bunch of very tired folk: those with Chronic Fatigue Syndrome. About one quarter of CFS patients have fatigue that is associated with low blood pressure or increased heart rate. Some CFS patients report fatigue when a hot shower or hot room causes blood pressure to drop, as do about one third of polio survivors. Other CFS patients have blue feet, just like our polio survivors' "polio feet," suggesting that blood pooling in the leg veins contributes to low blood pressure.

Polio survivors should have a doctor take their blood pressure and heart rate lying, sitting and -- if possible -- standing. Polio survivors who have fatigue associated with a drop in blood pressure or a slowed or racing heart need to see a cardiologist who treats low blood pressure. Compression stockings, which push blood back toward the heart, and medications that increase your blood volume or stop blood from pooling in the legs, can be helpful. If fatigue follows eating, frequent, small, higher protein meals can prevent the stomach from getting too full, stimulating the vagus nerve and dropping your blood pressure...and you.

[The Encyclopedia of Polio and Post-Polio Sequelae](https://www.papolionetwork.org/encyclopedia.html)

contains all of Dr. Richard Bruno's articles, monographs, commentaries, videos and “Bruno Bytes”
<https://www.papolionetwork.org/encyclopedia.html>

Are you looking for a specific topic?
The Encyclopedia Index (By Subject) is available by clicking [HERE](#)