Cardiovascular Issues of Polio Survivors

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Rupert D. Mayuga, MD, Assistant Professor of Clinical Medicine/Cardiology, Northwestern University Medical School, Chicago, Illinois

Cardiovascular disease (CVD) is the leading cause of death in both men and women in the United States. One of every 2.4 deaths is attributable to CVD. However, the incidence of CVD in individuals diagnosed with post-polio syndrome is not known.

CVD is often a "silent" disease without significant symptoms until its life-threatening or catastrophic sequelae appear suddenly. All too often, the first manifestation of CVD is sudden death, stroke, or heart attack. The need to identify individuals at increased risk early enough to alter its catastrophic course cannot be overemphasized.

Are there reasons to suspect that polio survivors who are experiencing post-polio problems might be at increased risk for CVD?

Yes, certain features such as generalized fatigue, generalized and specific muscle weakness, and joint and/or muscle pain may result in physical inactivity – deconditioning, obesity, and dyslipidemia. Polio survivors with respiratory difficulties may develop hypoxemia (low levels of oxygen). Any of these circumstances – deconditioning, obesity, dyslipidemia, and hypoxemia – can increase the risk for cardiovascular disease.

Furthermore, most polio survivors are at an age when CVD becomes increasingly more likely.

What are the common signs and symptoms of CVD?

CVD signs

Enlarged heart
Swelling of the ankles or legs
Unusual/excess weight gain
Wounds that do not heal well

CVD symptoms

Chest discomfort (pain, pressure, squeezing, heaviness, etc.) especially if brought on by exertion and relieved by rest
Shortness of breath with minimal exertion or upon lying down
Palpitation or irregular heart beats
Severe dizziness or loss of consciousness
Sudden weakness or paralysis of one part of the body
Sudden slurring of speech or loss of vision
Frequent nocturnal urination
Unusual and progressive fatigue
Leg pain/discomfort with walking

A WORD OF CAUTION: The symptoms of CVD overlap with common symptoms of post-polio syndrome. This presents a problem because individuals diagnosed with the syndrome may not recognize cardiovascular symptoms and think that these may just be a progression or altered manifestation of the post-polio symptoms. The resulting delay in diagnosis can be costly.

What tests should I have if I experience some of the above symptoms?

One study, of practical importance to polio survivors, evaluated the cardiovascular autonomic function of individuals who had polio (Borg, 1988) and concluded that there was no significant dysfunction of autonomic nerves despite the presence of progressive muscle atrophy.

This finding becomes important when one considers that many current methods for assessing cardiovascular function and fitness include evaluation of parameters – such as heart rate, blood pressure, heart rate variability, valsalva response, etc. – all of which require an intact autonomic system. The study results suggest that polio survivors in general can use any of a number of standardized tests for cardiovascular risk assessment such as the exercise stress test without a decrease in test sensitivity, provided that due consideration of the presence of muscular dysfunction is made.

For example, an arm ergometer may be used instead of a treadmill as the method of providing the exercise in individuals with lower extremity weakness. There are also non-exercise types of cardiovascular stress testing such as pharmacologic, vasodilator perfusion stress tests (dipyridamole or adenosine stress tests) used in conjunction with nuclear imaging, or a dobutamine stress echo test. These are the preferred tests for those who cannot perform significant exercise.

Also, make certain that blood pressure, cholesterol/lipid profile, fasting blood sugar (FBS), body weight, and an ECG are included in your annual physical examination. A chest x-ray would also be useful periodically to determine heart size and the status of the lungs. More frequent testing as well as additional specific tests (stress tests, echocardiograms, coronary angiograms, etc.) may be needed.

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Although there appears to be no large scale studies evaluating whether individuals experiencing post-polio syndrome are at increased risk for CVD, it is probably safe to assume that there may be increased risk in certain individuals who have the traditional risk factors mentioned above. A study of 64 post-polio individuals (Agre, 1990) found that 66% of the men and 25% of the women had hyperlipidemia (high lipid concentration) with men also having low HDL (the "good") cholesterol. These findings underscore the need to actively screen for dyslipidemia and/or hypercholesterolemia (excess cholesterol in the blood; less than 200 total cholestrol is desirable). In addition, deconditioning and obesity was found to be strongly associated with the presence of dyslipidemia. Therefore, it is important to address these issues.

◆ *Since CVD is described as a "silent" disease without significant symptoms, what are some of the risks factors that are of major importance to everyone with or without a history of polio?*

Risk factors include cigarette smoking, hypertension (high blood pressure), elevated LDL cholesterol (the "bad" cholesterol; less than 100 is optimal), low HDL cholesterol (the "good" cholesterol; 60 or more is optimal), diabetes, male gender, post-menopausal women, family history of premature coronary heart disease, the presence of peripheral arterial occlusive disease, and, last but not least, obesity and physical inactivity.

The presence of multiple risk factors results in more than just additive risk.

◆ *How can I avoid physical deconditioning and becoming overweight?*

In individuals with identified post-polio symptoms consistent with cardiovascular deconditioning, there has been some hesitation in prescribing an exercise program to improve conditioning because of fears that traditional exercise regimens may lead to further loss of muscle from overuse. The prospect of safely and effectively training PPS subjects was evaluated by a number of investigators. All investigators found that a carefully designed exercise program, which avoided excessive muscle fatigue was able to provide positive results.

Consult your health care professional for appropriate recommendations. In general, exercise has to be started very gradually and at a lower level individually tailored to each individual's physical status and needs. Care should be taken not to overexercise. Nutritional counseling is also a useful resource. ■

"If we don't know the disease, we don't know that we are at increased risk, and we might not do anything about it."

– Rupert D. Mayuga, MD

SIGNS AND SYMPTOMS OF A HEART ATTACK OR IMPENDING HEART ATTACK:

Continuous chest and/or throat discomfort/pressure/pain/heaviness lasting more than 15 minutes even with rest and even after sublingual nitroglycerin. This may be associated with shortness of breath, sweating, dizziness, and palpitations. Discomfort may radiate to the left arm or jaw.

Immediately proceed to the nearest emergency room or call the paramedics (911).

If you have no severe allergies to aspirin, chew one tablet of regular 325 mg. aspirin. This can help immediately by preventing or delaying further accumulation of blood clot in the arteries of the heart. In the emergency room, you can be given powerful clot dissolving medications or, if the facilities are available, emergency coronary angioplasty (a means of re-opening a blocked artery using a small balloon at the tip of a catheter) can be performed. These procedures can prevent an impending heart attack or reduce the size of a heart attack that has already started, thus reducing significantly the risk of dying as well as the risk of future complications.

Remember, emergency coronary angioplasty is only effective if the blocked coronary artery causing the heart attack can be opened within the first few (preferably less than three) hours of the onset of chest discomfort.

Do not delay in getting to the ER!