

**This month:**

- 1. What is Syndrome X, and how is it diagnosed?**
- 2. What are the indications for antibiotic prophylaxis?**

## ***1. What is Syndrome X, and how is it diagnosed?***

**Question submitted by:** Dr. A. Abdulla, Toronto, Ontario.

Syndrome X is not a diagnostic recycle bin for patients who have non-cardiac chest pain. It is not a diagnosis of epicardial coronary spasm, nor is it a diagnosis which includes chest pain secondary to esophageal spasm.

Cardiac “Syndrome X” is angina-like chest pain in the presence of a normal coronary arteriogram. However, there must be some electrocardiographic evidence of “myocardial ischemia” as shown by non-specific ST changes on the resting electrocardiogram (ECG), and/or non-specific ST changes on the exercise ECG. Nuclear tests, such as thallium or MIBI, are usually normal. Left ventricular function is normal at rest and during stress.

The mechanisms of this chest pain syndrome may be related to microvascular dysfunction, a sympathovagal imbalance, and/or an unusual sensitivity to pain metabolites. In fact, many of these patients do exhibit pain during intracoronary injections at the time of the angiogram despite normal, large epicardial vessels. They do not exhibit coronary spasm. Such patients are often referred to as having “microvascular angina,” as there may be

abnormalities in smaller intramyocardial resistant vessels which are not visible to the resolution of angiography.

This syndrome occurs more frequently in women (many of whom are premenopausal). Although the condition is benign with a very good prognosis, it can interfere with quality of life and is associated with increased use of health facilities. Therapy with nitrates is often ineffective. Such patients should be treated with beta blockers or calcium antagonists, which have been effective in reducing the frequency and severity of angina-like symptoms. The true diagnosis cannot be made without the normal coronary angiogram. Such patients require ongoing reassurance.

**Answered by:** Arthur Dodek, MD, FACC, FAGP, FRCPC (Cardiology), ABIM, FSCAI, clinical professor of medicine, University of British Columbia, Vancouver, British Columbia.

## 2. What are the indications for antibiotic prophylaxis?

**Question submitted by:** Dr. A. Abdulla, Toronto, Ontario.

Antibiotic prophylaxis for the prevention of infective endocarditis must be considered in patients with structural heart disease, such as congenital shunts, congenital and acquired valvular heart disease, and coarctation of the aorta. Patients having cardiac surgery for correction of any of these conditions should have appropriate antibiotics.


High-risk patients are those with prosthetic heart valves—both mechanical and bioprostheses—cyanotic congenital heart disease, and surgically constructed shunts or conduits. Patients with other forms of congenital heart disease, acquired valvular disease, hypertrophic cardiomyopathy, and mitral valve prolapse with mitral insufficiency and/or thickened leaflets, are at moderate risk. Those at low-risk include patients with atrial septal defect, repaired shunts, and mitral valve prolapse without insufficiency. These low risk patients, including those with innocent murmurs, pacemakers and previous coronary bypass surgery, do not require infective endocarditis prophylaxis.

Dental procedures requiring prophylaxis are extractions, periodontal procedures including scaling, implant replacement, and prophylactic cleaning of the teeth. Other dental procedures do not require antibiotic prophylaxis.

Prophylaxis is required for upper respiratory surgical procedures, esophageal dilatation, and most gastrointestinal (GI) surgery, except simple endoscopies and genitourinary tract instrumentation. It is not recommended for

bronchoscopy, GI endoscopies with or without biopsy, normal vaginal deliveries, cesarean section, hysterectomy, or instrumentation of uninfected tissues.

Prophylaxis is not necessary for dermatologic procedures, orthopedic surgery, or suturing of uninfected lacerations. Despite this conventional

advice, it has never been proven that appropriate prophylaxis has decreased the incidence of infective endocarditis. Many cases occur in the absence of any history of the procedures discussed. 

### Reference

1. Prevention of Bacterial Endocarditis: Recommendations by the American Heart Association. *Circulation* 1997; 96:358-66.

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