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Coronary Artery Disease

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Coronary Artery Disease

INTRODUCTION

Coronary artery disease (CAD) is the leading cause of death in men and women in the western world and the second commonest cause of death in developing countries.^{1,2} The incidence of CAD has decreased over the past few years, but lately the decline has slowed.^{3,4} At least 12 million people in the United States have CAD, and more than 1 million Americans have myocardial infarctions yearly.⁵ Each year, half a million people in the United States die of CAD, 30% of them having had no prior symptoms.^{5,6}

In addition to these enormous medical and social consequences, CAD also has devastating economic implications. In the United States, the yearly economic burden of CAD exceeds \$100 billion.⁷ A better understanding of the risk factors, pathophysiology, clinical presentations, diagnostic evaluation, and treatment of CAD can help in decreasing the medical and economic burden of the disease. This manual will attempt to present information contributing to such an understanding, using a case presentation format.

CASE PRESENTATIONS

CASE 1 PRESENTATION

A 65-year-old African American woman who is a retired schoolteacher is brought to the emergency department by her husband because of epigastric discomfort. She has noted occasional epigastric and chest fullness during the past 4 months but says that the symptoms today have increased in frequency and intensity. Earlier this morning, she woke with a feeling of generalized fatigue; when the symptoms recurred after a breakfast of eggs and bacon, they were not relieved by antacids. Her medical history is significant for arthritis of both knees (the severity of which keeps her almost immobile), a 20-year history of hypertension, and hypercholesterolemia that is controlled by diet.

Physical examination in the emergency department shows a height of 163 cm (64 in), a weight of 110 kg (242 lb), a blood pressure of 204/110 mm Hg, and a

heart rate of 96 bpm. Auscultation of the chest is significant for an S_4 . A guaiac test is negative for occult blood.

CASE 2 PRESENTATION

A 64-year-old white man is brought to the emergency department because of a 2-hour history of severe chest pain and pressure associated with shortness of breath. He has smoked for the past 45 years and has a 20-year history of hypertension. His father died at age 54 years after a second myocardial infarction (MI). The patient is pale and diaphoretic. Physical examination shows a blood pressure of 108/60 mm Hg, a heart rate of 114 bpm, and a respiratory rate of 24 breaths/min. Auscultation of the chest reveals an S_1 , an S_2 , an S_3 , and mild diffuse rales. One of a series of electrocardiograms (ECGs) (**Figure 1**) shows sinus rhythm and junctional escape beats with a 2- to 4-mm convex ST-segment elevation in leads V_1 through V_4 , I, and aV_L and Q waves in leads aV_L and V_1 through V_2 .

RISK FACTORS FOR CORONARY ARTERY DISEASE

- What are patient 1's risk factors for coronary artery disease?
- What are patient 2's risk factors for coronary artery disease?

TRADITIONAL RISK FACTORS

Hypertension, smoking, diabetes mellitus, male sex, older age, family history of premature CAD, and increased cholesterol level are all established risk factors for the development of CAD (**Table 1**). In addition, factors long thought to increase the risk for CAD, either directly or through clinical association, include physical inactivity, obesity, microalbuminuria, left ventricular hypertrophy, and postmenopausal status.^{8,9} Patient 1 thus has multiple risk factors for CAD, including hypertension, increased cholesterol level, postmenopausal status, and obesity, whereas patient 2's hypertension, gender, family history, and smoking history are obvious risk factors. The longer the duration of one of these risk factors and the greater the number of risk factors present in a patient, the higher is that patient's probability of developing CAD.¹⁰