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## SEMINAR ON ASYMPTOMATIC CORONARY ARTERY DISEASE

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### Introduction

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Asymptomatic coronary artery disease may be defined as follows: significant lesions in the coronary arteries (discovered by necropsy or by means of coronary arteriography during life) without symptoms, especially angina or its usual equivalents. In my approach to this syndrome, I think of it as two types (Table 1). Type 1 refers to totally asymptomatic persons and Type 2 to partially asymptomatic ones. Type 2 is subdivided. Type 2A consists of large numbers of persons who are usually symptomatic but in whom episodes of silent (painless) myocardial ischemia can be demonstrated. For diagnostic and therapeutic purposes, these patients are treated by conventional approaches and are of special interest only in relation to learning how their asymptomatic episodes differ from their symptomatic ones. Type 2B refers to persons who are totally asymptomatic after a myocardial infarction but still demonstrate ischemia. The

latter concept is clinically important because the demonstration of continuing ischemia separates these patients from "burnt-out" cases of ischemic cardiomyopathy, as well as individuals with completed infarction and no other active disease.

The current seminar was conceived because of increasing interest in the entire spectrum of asymptomatic coronary artery disease. This interest has been stimulated by a variety of factors, including the ready availability of coronary arteriography (which has allowed confirmation of the presence of this syndrome during life) and the relative safety and widespread acceptance of coronary artery bypass surgery (which has encouraged physicians to consider the pros and cons of surgical therapy in certain patients with potentially lethal though "silent" disease). An additional and extremely important factor has been the continuing series of studies from many centers around the world investigating the pathophysiology of all types of myocardial ischemia. These studies, especially those dealing with spontaneous, pacing-induced and exertion-induced angina, have shed new light on the alterations in left ventricular function and myocardial blood flow associated with transient ischemia in human subjects. Some of these studies also provided, albeit indirectly, the initial data highlighting differences between those episodes of myocardial ischemia in which angina or anginal equivalent was present and those in which it was absent. These often anecdotal observations resulted in more specific attention recently being directed to those persons who exhibit the phenomenon of silent or painless myocardial ischemia, the hallmark of clinically important asymptomatic coronary artery disease.

What we have already learned about the pathophysiology of silent myocardial ischemia is described in the first four articles of the seminar. These concise, original articles by investigators from several countries address differences be-

**Table 1.** Types of Asymptomatic Coronary Artery Disease

Type 1: total	Presence of significant coronary artery lesion at angiography or necropsy without history of angina, myocardial infarction, arrhythmia or congestive heart failure.
Type 2: partial	
2A:	Asymptomatic with some episodes of myocardial ischemia, but symptomatic with other episodes.
2B:	Asymptomatic after a myocardial infarction, but still demonstrating ischemia.

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tween silent and symptomatic myocardial ischemia in relation to left ventricular hemodynamics (Chierchia et al.), left ventricular wall motion abnormalities (Cohn et al.), electrocardiographic findings during Holter monitor and exercise studies (Cecchia et al.) and the myocardial pain threshold (Droste et al.). These articles highlight the controversy concerning alterations in pain perception being responsible for the lack of symptoms or whether less myocardium is at jeopardy during painless ischemic episodes.

Although patients with coronary artery disease who are totally asymptomatic are estimated to constitute only about 5% of the middle-aged male population, the percent of patients who become asymptomatic after a myocardial infarction, but still demonstrate ischemia, may be as high as 20 to 30%. Furthermore, the detection of these latter patients is much more common because of routine postinfarction exercise testing. Thus, physicians need to know more about the diagnosis and management of this syndrome.

The desire to know more about all aspects of silent myocardial ischemia is given added impetus by the concern that many persons with asymptomatic coronary artery disease may die suddenly or have a nonfatal myocardial infarction as their first manifestation of heart disease. Could earlier detection improve their prognosis? If so, how should they be treated? These are questions that we do not have answers to at present. We do know which screening procedures are the most successful in identifying persons with severe but asymptomatic disease; the problems in performing and in-

terpreting these tests in the general population are amply described by Froelicher and Uhl. On the basis of their extensive experience with U.S. Air Force personnel, they are able to provide a realistic assessment of what screening procedures can and cannot do. Whether they should be used—or more appropriately, when they should be used—is controversial because of the cost/benefit ratio of searching for a disease that has a small prevalence in the general population, and because of the uncertainty as to what to do for the afflicted persons once they are identified. Cohn and Cohn consider the unique psychologic aspects of the syndrome that affect patients and their families. In a potentially lethal disease in which prognosis is ill defined and treatment controversial, emotional problems are not inconsequential. Finally, in a concluding paper I address the issue of whether the presence of a defective anginal warning system is more likely to lead to sudden death or a myocardial infarction during exertion. This supposition is far from certain and, in fact, the opposite conclusion may be drawn from preliminary studies, with the caveat that extensive disease in some asymptomatic persons does not necessarily result in a benign prognosis and may require aggressive treatment.

*In summary*, our knowledge of asymptomatic coronary artery disease is still limited despite the great strides of the last several years. Even though what we do not know is still much more than what we do know, the studies presented in this seminar should stimulate even greater interest in understanding this fascinating but enigmatic syndrome.