Interesting electrocardiogram

THE OMINOUS SILENCE IN CORONARY ARTERY DISEASE

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With the advent of more extensive testing for coronary artery disease, much new information about the details of this condition has surfaced. It has been known for many years that myocardial infarction can be silent and recent epidemiologic studies indicate that 25 to 35 percent of infarcts can be silent. This silence, of course, in no way implies a better prognosis. Indeed, in the Framingham study results 10 years after the silent event (the infarct) 45 percent were dead as compared to 39 percent of those who had a typical symptomatic event.

Not only can infarcts be asymptomatic but silent (asymptomatic) ischemic episodes are now recognized as a real problem in cardiology and have been recently estimated to represent 75 percent of all transient (myocardial) ischemic episodes. Now that Holter monitoring can reveal ST depressions over a prolonged period of time it appears that silent myocardial ischemia is a real part of the spectrum of coronary insufficiency.

Another estimate of the importance of silent ischemia states that one third of patients with known coronary artery disease have silent attacks. The use of Holter monitoring has now joined the treadmill exercise test in uncovering ST depressions of ischemia in asymptomatic subjects. More recently still another approach is available – namely echocardiography at rest and during exercise. This study can uncover abnormal wall motion in ischemic areas. Nuclear studies also can reveal such abnormal wall areas. It has also become clear recently that some coronary patients have both silent (or painless) events and true anginal pain in varying proportion during the day.

This very brief review of the silent coronary events highlights the fact that the insurance aspects of coronary patients are undergoing re-evaluation. The silent periods of coronary disease are indeed ominous. Not only is the ischemia itself deleterious to the myocardium but it sets the stage for ventricular or, less frequently, atrial arrhythmias which may be serious, even fatal.

In cases of sudden death it is estimated that silent ischemia is a factor 25 percent of the time. A recent study from the Johns Hopkins Hospital (Gottlieb et al. *NEJM* 314:1214-1219, 1986) revealed that 53 percent of patients with unstable angina had pe-

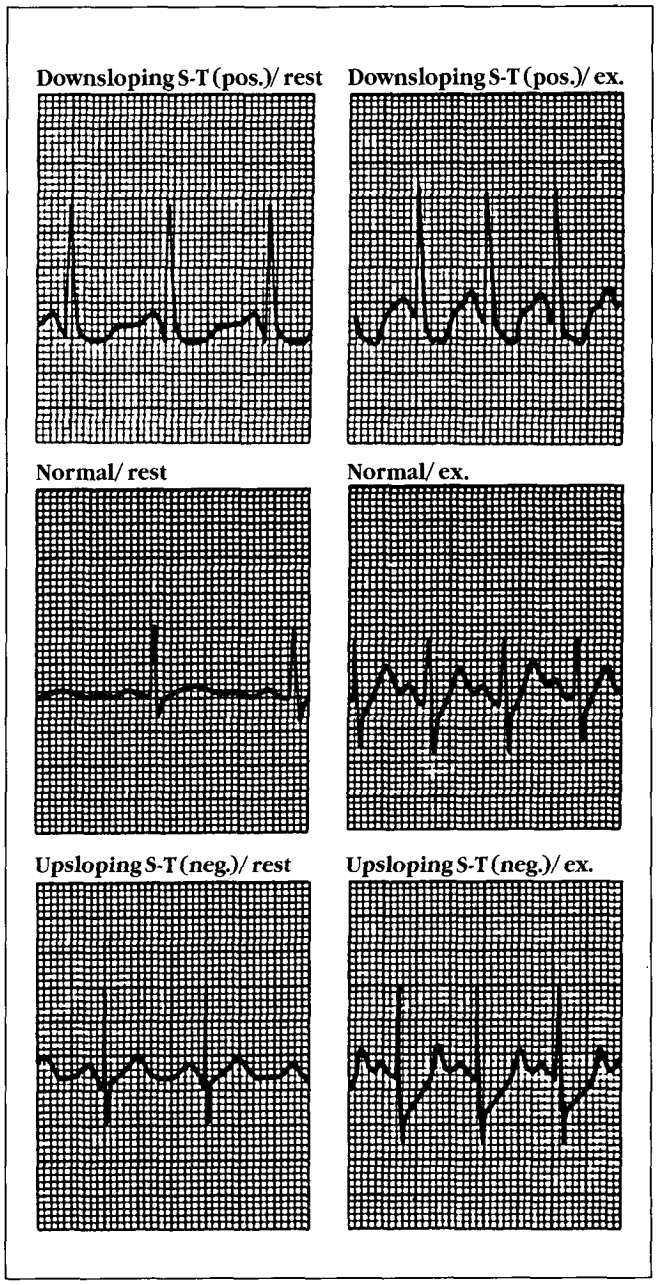

Figure One. Treadmill test. These graphs show the correct interpretation features in a positive treadmill test, 1 mm. or more of ST depression with a downsloping ST or J point depression.

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riods of silent ischemia despite intensive medical therapy and this identified a subset of coronary patients at risk for early unfavorable outcomes. They found that those with 60 minutes or more of silent ischemia (ST segment depression of 1.0 mm or more) per 24 hours had a worse prognosis than those with shorter periods of silent ischemia or no silent ischemia.

In contrast to the ominous nature and surprisingly frequent occurrence of silent ischemia, there have been some recent studies concerning survival in patients who have undergone anatomical analysis of their coronary tree by angiograms. Angiograms have usually been considered the gold standard for estimation of the degree of coronary disease. With coronary spasm and silent ischemic events now clearly a part of the disease, re-evaluation of the coronary anatomy is important. A large database (Kemp, et al. *JACC* 7:479-483, 1986) from the cooperative study CASS was based on 21,487 coronary arteriograms of which 4,051 were either normal or showed mild disease (less than 50 percent stenosis, normal ejection fraction and no abnormal segmental wall motion by echocardiography).

The seven-year survival rate for normal arteriograms was 96 percent and 92 percent for those with mild disease. These figures assist us in considering the proper rating for applicants with little obstructive anatomic coronary disease by anglogram and are reassuring about the applicants with mild disease (as defined above) who have normal resting electrocardiograms and normal treadmill exercise tests. On the other hand, if there is mild disease by angiogram but a positive treadmill test – the implied mechanism of the positive test (showing ischemia) being coronary spasm on top of anatomic obstruction– rating should be higher. Figure One shows the correct interpretation features in a positive treadmill test, 1 mm. or more of ST depression with a down-sloping ST or J point depression.