ECG and Treadmill test

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ECG and Treadmill test is the very useful test for diagnosis of the patient with suspected ischemic heart disease(IHD). ECG at rest may be normal in patients with stable angina pectoris. But we should be take the ECG for distinguish from other conditions, such as old myocardial infarction, ST-segment change, T-wave change, left ventricular hypertrophy and cardiac rhythm disturbance.

Treadmill test is the most widely used test for both the diagnosis and the estimation of risk and prognosis of IHD. Exercise is a common physiologic stress used to elicit cardiovascular abnormalities not present t rest and to determine the adequacy of cardiac function. The most important indications for treadmill test are to aid in establishing the diagnosis of coronary artery disease(CAD), determining functional capacity, and estimating prognosis.

The diagnostic accuracy of treadmill test is not enough in patient with suspected CAD. The sensitivity of the treadmill test in patients with CAD is approximately 68^ and specificity is 77%, so a negative result dose not exclude CAD. In interpreting treadmill test, the pretest probability that CAD exists in the patients under study should be considered. A positive result on treadmill test indicates that the likelihood of CAD is 98% in males who are >50 years with a history of typical angina pectoris and who develop chest discomfort during the test. But the incidence of false-positive tests is significantly increased in patient with low- or very low probabilities of IHD, Also, in interpreting treadmill test, we should be considered these parameters; the total duration of exercise, the times to the onset of ischemic ST-segment change and chest discomfort, the depth

of the ST-segment depression and the time needed for recovery of these ECG changes. Usually, the development of angina and/or severe ST-segment depression(>2mm) at a low workload (before completion on stage II of the Bruce protocol) and/or ST-segment depression that persist >5 min after the termination of exercise increases the specificity of the test and suggests severe IHD with multivessel CAD and an adverse prognosis.

Treadmill test provides not only diagnostic information but also more importantly prognostic data. Duke treadmill score is calculated as follows; TM Score = exercise time – (5 x ST-segment deviation)-(4 x angina index). Using the Duke treadmill score, patients may be divided into categories of low (score≥5), intermediate (score <5 but ≥-10), and high risk (score<-10). The 5-year survival rates among patients categorized as low, intermediate, and high risk were at 97%, 91%, and 72%.

In the patients with suspected IHD, ECG and Treadmill test is the important diagnostic and prognostic tools. In interpreting of treadmill test, we should be considered the pretest probability, exercise time, the times to the onset and the time needed for recovery of ST-segment change, depth of ST-segment change.