

外 人 講 演 IV

EVALUATION OF PATIENTS WITH SUSPECTED CORONARY ARTERY DISEASE

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Coronary artery disease may be detected either by a measurement of the regional distribution of myocardial perfusion or by detecting the impact of ischemia on regional ventricular function. Thallium myocardial perfusion imaging with injection at peak stress and subsequent imaging for the immediate distribution of thallium followed by re-evaluation of the patient at 4–6 hours permits detection of transient myocardial ischemia and separation of patients with this problem from those who are normal and those with myocardial scar. The mechanism of thallium uptake and its subsequent redistribution have been evaluated by several investigators: the initial distribution of thallium is related to blood flow, subsequent distribution, however, is unrelated to flow. In fact, only a small residual flow is necessary for thallium to fully redistribute into viable tissue even with marked persistent decreases in blood flow. Experiments to evaluate criteria for interpretation of a thallium scan suggests that in addition to the evaluation of the regional distribution of thallium in the myocardium, regional thickness of the myocardial silhouette may be of equal importance. Thinning occurs with subendocardial ischemia. In addition, the pulmonary uptake of thallium may be an important accompaniment of left ventricular ischemia. Prolongation of transit time through the lungs results in increased concentration of thallium—Causing increased pulmonary uptake.

Ventricular function can be measured at rest and at stress using the multiple gated acquisition (MUGA) approach. Preliminary studies suggest that a comparison of rest to stress gated imaging can detect areas of transient myocardial ischemia by a decrease in ejection fraction and by the sudden onset of regional wall motion abnormalities.

It is unclear which of these procedures will be more sensitive for the detection of myocardial ischemia. However, both offer the possibility of new non-invasive means of detecting patients with occult coronary artery disease.