

Differential Diagnosis of Myocardial Infarction and Primary Myocardial Disease with Computerized Myocardial Scintigraphy

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Differential diagnosis between primary myocardial disease and myocardial infarction was studied with a computerized scintigraphy.

Myocardial scintigraphy with Cs-131 was performed in 5 healthy subjects, 22 cases of myocardial infarction and 10 cases of primary myocardial disease in which the electrocardiographic signs were similar to those of myocardial infarction, that is, ST elevation, coronary T wave and abnormal Q wave.

The data obtained were processed by the technics of the multiplication and the smoothing. Then a region in myocardial image over a level of counts being set up was displayed on a cathode ray tube. The level of counts was raised, so that a cold area was clearly illustrated in the region displayed. In cases of hypertrophic cardiomyopathy, there was illustrated no cold area in the image of myocardium. In cases of post-myocarditic cardiomyopathy the the image of myocardium looked sparse in the display over a certain level of counts. In healthy subjects the image of myocardium was homogeneous at any level of counts.

Further, following attempts were made to demonstrate clearly the differences between the

images of myocardium in each above-mentioned condition. First, the estimation of the degree of myocardial uptake was performed by the calculation of the ratio of myocardial uptake to hepatic uptake. The myocardial uptake in hypertrophic cardiomyopathy was mostly higher than that in myocardial infarction and was not always over that in healthy subjects. In cases of post-myocarditic cardiomyopathy, the uptake was impaired all over the image of myocardium.

Second, to examine the homogeneity of uptake in the image of myocardium the autocorrelation was calculated for the serial data of counts obtained on a scanning line, in the image of myocardium. By means of this method the sparse image of myocardium in post-myocarditic cardiomyopathy was rather clearly distinguished from the homogeneous image in hypertrophic cardiomyopathy and in healthy subjects.

In summary, it was considered that the above-mentioned method for the data processing in the myocardial scintigraphy was useful for differential diagnosis between myocardial infarction and primary myocardial disease which exhibited the electrocardiographic signs similar to those in myocardial infarction.