IMPROVED FACTOR ANALYSIS ALGORITHMS AS AN AID IN THE INTERPRETATION OF FIRST-PASS AND EQUILIBRIUM CARDIAC STUDIES. +Ishii K., +Nakazawa N., +Yamada Y., +Suzuki Y., +Yoda K., +Matsumabashi T., +Mochizuki C., +Noro Kitasato University School of Medicine, Kanagawa.

M.Di.Paola and Barber applied factor analysis for dynamic investigation carried out with scintillation camera. We analysed the data of radionuclide angiocardiography with a way based on the technique of factor analysis presented by M.Di.Paola. Eighteen patients were studied, including 6 ventricular aneurysm, 6 myocardial infarction and 6 hypertension.

RESULT: All patients suffering from ventricular aneurysm was detected their abnormal region by means of factor analysis. In two cases out of six patients suffered from myocardial infarction, we failed to detect the location of abnormality. One out of these patients was suffered from subendo-cardial infarction. To detect wall motion abnormalities, we conclude factor analysis was superior to phase analysis.


Clinical nuclear medicine has been widely accepted. At present time, wall motion assessment is not completely satisfactory in nuclear medicine because of poor quality of image using the same method with contrast ventriculography. Regional functional images such as regional EF and phase images obtained from the regional time-activity curve are of clinical value. However the regional time-activity curves are significantly affected by change of LV volume and relationship between the pixel and LV position. Therefore regional wall motion assessment in fixed coordinate system has problem on quantification.

We reported a new image reconstruction method for regional wall motion in moving coordinate system, however some regional information is lost in this method. At this time, we developed a new analytical method to measure the distance between regional wall points and LV centroid through cardiac cycles in 3-dimensional basis. Using this method, regional information is reserved and quantitative functional images can be generated. Objective circumferential profile analysis is applicable to each functional images.

To assess clinical reliability of this new 3-dimensional analytical method, we studied 42 patients with IHD and 39 normal controls. In comparison with conventional fixed matrix functional images, this new method has improved reliability for LV wall motion analysis.