

227

EVALUATION OF LEFT VENTRICULAR FUNCTION BY AUTOMATIC ANALYZING METHOD AFTER CORONARY ARTERY BYPASS GRAFTING. M.KOBAYASHI, T.NISHIMURA, T.UEHARA, K.HAYASHIDA, NATIONAL CARDIOVASCULAR CENTER, OSAKA. N.IKEGAYA, TOSHIBA MEDICAL SYSTEM CORP, OSAKA.

In 25 patients with coronary artery disease who underwent aortocoronary bypass graft surgery, we measured the left ventricular function with rest radionuclide angiography before and after surgery.

A left ventricular function analyzing method has been developed to detect the left ventricular contour from gated blood pool imaging. Left ventricular ejection fraction (LVEF), LV volume and quantitative wall motion were calculated.

- 1) LVEF decreased in the most of the patients who had incomplete revascularization.
- 2) Left ventricular end diastolic volume and stroke volume had a tendency to decrease, affected by increased heart rate. On the other hand cardiac output change little or increased.
- 3) The result that regional wall motion improved after surgery, while LVEF changed little before and after surgery, suggests the evaluation of regional wall motion are important.
- 4) The automatic analyzing method is available for the interventional study.

228

AN APPLICATION OF FACTOR ANALYSIS FOR PRE AND POST OPERATIVE DIAGNOSIS OF THE PATIENTS WITH CARDIAC VALVULAR DISORDER. K.Ishii, K.Nakazawa, N.Yamada, T.Takamatsu, T.Komatsu, K.Yoda, T.Matsubayashi, H.Asari, M.Shimizu, C.Noro, *M.Hara, *H.Yamazaki. Kitasato University School of Medicine, Kanagawa. *Marubun Co., Tokyo.

In 1974, Sylvestre and Lawton reported about factor analysis technique. After that, M. Di. Paola and Barber applied factor analysis for dynamic investigation carried out with scintillation camera. With a way based on the technique of factor analysis presented by M. Di. Paola, we analysed the data of the patients. Fourteen patients with cardiac valvular disorder were studied.

Result: After operation, four patients were improved and six patients were not improved in factor analysis and phase analysis. Two patients were improved in factor analysis but were not improved in phase analysis. In another two cases, we had opposite result.

Left ventricular ejection fraction were improved in all patients whose result were good in factor analysis.

We conclude factor analysis is useful for post operative observation of the patients with cardiac valvular disorder but it is difficult to interpret.

229

IMPROVED LEFT VENTRICULAR DIASTOLIC FILLING AND ASYNCHRONY IN PATIENTS WITH ISOLATED DISEASE OF THE LEFT ANTERIOR DESCENDING CORONARY ARTERY AFTER AORTO-CORONARY BYPASS SURGERY: ASSESSMENT WITH RADIONUCLIDE VENTRICULOGRAPHY.

T.Shimizu, M.Ozaki, T.Yamagishi, Y.Furutani, K.Matsumura, Y.Matsuda and R.Kusukawa. Yamaguchi University, Ube.

To determine the effects of aorto-coronary (A-C) bypass surgery on impaired left ventricular (LV) diastolic filling and asynchrony, we studied 11 normals (group 1) and 9 patients with isolated disease of the left anterior descending coronary artery by radionuclide ventriculography before (group 2A) and after (group 2B) A-C bypass surgery. The time activity and first derivative curves of the global and regional LV were computed. All had normal global LV systolic function (ejection fraction, peak ejection rate) at rest, but peak filling rate (PFR) in the global LV was decreased in group 2A than in group 1 ($p < 0.01$). After A-C bypass surgery, PFR was increased significantly ($p < 0.01$). Total |t|, which was defined as the sum of the absolute values of the time differences from global PFR to regional PFR (septal, apical and lateral), was greater in group 2A than group 1 ($p < 0.01$). After A-C bypass surgery, total |t| was decreased significantly ($p < 0.01$). In all subjects, a negative correlation existed between total |t| and global PFR ($r = -0.55$, $p < 0.01$). These data suggest that impaired global PFR may result from asynchrony, which is a reversible manifestation of subclinical myocardial ischemia due to coronary artery stenosis.

230

EVALUATION OF LEFT AND RIGHT VENTRICULAR INOTROPIC RESERVE BY POSTEXTRASYSYOLIC POTENTIATION. H.Sugihara, H.Adachi, H.Nakagawa, Y.Kubota, S.Inagaki, H.Katsume, T.Miyazaki and H.Ijichi. Kyoto Prefectural University of Medicine. Kyoto.

Observation of postextrasystolic potentiation (PESP) may be excellent approach to predict myocardial viability and inotropic state of the ventricle. We evaluated inotropic reserve in the left (LV) and right ventricle (RV) from PESP by gated radionuclide angiocardiology (GRAG).

The electrode catheter was positioned in the apex of the RV, and ventricular trigeminy was generated. GRAG with Tc-99m-HSA was performed in a modified LAO projection, and list mode data acquired for 12 minutes were analysed.

In postextrasystolic beat, both end-diastolic and stroke volumes were increased, but end-systolic volume was decreased, hence, global ejection fraction (EF) was increased in both LV and RV. Abnormal motion found in the ischemic wall was improved in the many cases of ischemic heart disease, in which regional EF was increased correspondingly.

These results indicate that region improved in the wall motion by PESP or increased regional EF, can be identified to be the region possessing inotropic reserve, namely to be the viable region.

For such evaluation, PESP using GRAG is an useful means.