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DETECTION OF LEFT ATRIAL MYXOMA BY FACTOR ANALYSIS OF GATED RADIONUCLIDE IMAGING.
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Radionuclide imaging plays an important role in diagnosing left atrial myxoma(LAM). On the other hand, factor analysis for dynamic study ia useful as a qualitative pattern-recognition method. So, we studied diagnostic value of factor analysis for LAM. Equillibrium radionuclide angiocardiography was performed in 6 LAM patients and 6 Controls(C). Left ventricle was shown with only one factor in C, but in 5 of 6 LAM patients another factor was observed in the basal portion of the left ventricle. After surgical remove of myxoma, this abnormal factor of the left ventricle was disappeared. Factor analysis and Fourier analysis with phase image were equally valuable in detection of LAM.

We concluded that factor analysis was feasible to find a left atrial myxoma prolapsing into the left ventricle during the diastole, and factor analysis was useful equally as phase image for detection of LAM.

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EVALUATION OF ATRIOVENTRICULAR REGURGITATION BY FACTOR ANALYSIS : SEPARATION OF ATRIAL FACTOR FROM VESSEL AND VENTRICULAR FACTORS.
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Factor analysis (FA), primarily used for the detection of regional wall motion abnormality, was applied to evaluate atrioventricular regurgitation by separating atrial factor from vessel and ventricular factors. To sepatate atrial factor effectively, optimal condition was determined in advance regarding to magnification, camera position on acquisition and dixels to use. FA (3 factors to extract, using 8*8 compressed matrix size of LAO-MUGA image) was performed under the optimal condition in 20 control subjects (6 normal,3 hypertension , 7 angina, 4 mitral stenosis), 6 patients with mirtal regurgitation (MR) and 4 with tricuspid regurgitation (TR).

In controls, 3 factors due to atrium, vessel and ventricle were highly identified, and the separation rate was 80% for the right atrium (RA) and 85% for the left atrium (LA). However, RA in TR (75%) and LA in MR (89%) were inseparable from vessel factor. On the assumption that inseparation of atrium might be caused by atrioventricular regurgitation, sensitivity and specificity were 89% and 83% in MR, and 75% and 72% in TR, respectively.

In conclusion, FA is useful in the diagnosis of MR and TR from the viewpoint of separation or inseparation of atrial factor.

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QUANTITATIVE EVALUATION OF PHASE ANALYSIS USING PHASE HISTOGRAM: THE RELATION BETWEEN FUSION WAVE AND PHAE IN WOLFF-PARKINSON-WHITE(WPW)SYNDROME.
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To evaluate phase analysis quantitatively, the relation between fusion wave in ECG and phase was examined.

30 left cardiac type W-P-W syndrome patients were studied by ECG and gated cardiac pool scintigraphy using in vivo labelled Tc-99m RBC 25-30mCi by PYP acquired from m-LAO35°. Fourier transform of the first harmonic approximation was performed and functional images of phase and amplitude were made. We took ROIs of each ventricle in phase image reffering amplitude image and made phase histograms of each ventricle. Max, Min, Mean value and standerd deviation (SD) of each ventricle were calculated from phase histogram. (Max-Min) of total ventricle, (right ventricular(RV)Mean-left ventricular(LV)Mean) and (RVMin-LVMin) had significant correletion with QRS interval of ECG.(r=0.75,0.62,0.60,respectively)

We concluded that phase distribution reflected fusion beat of W-P-W syndrome quantitatively,and so quantitative phase analysis was a reliable method for evaluating cardiac wall motion.

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NEW METHOD OF DISPLAY FOR CARDIAC PHASE AND AMPLITUDE USING THREE DIMENSIONAL MAP.
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Three dimensional(3D) map of cardiac phase and amplitude was made from gated single photon emission computed tomography (GSPECT) of cardiac pool image. Arrhythmia and ischemic heart disease were evaluated by this 3D map.

Circumferential profile analysis was performed to all slices of each ventricle. Before circumferential analysis of phase, areas interior to end-systolic boundaries were excluded by masking. Polar functional map(i.e.Bulle's-eye display) of phase and amplitude was made from these profile curves. This 3D map was applied to arrhythmia such as Wolff-Parkinson-White syndrom and ischemic heart disease. We could identify the initial site of activation and contractionpattern in functional map, and patients with ventricular asynergy, the localization and severity of asynergy was well evaluated. We concluded that 3D map of ventricular phase and amplitude derived from GSPECT, as well as myocardial perfusion map, can be useful diagnostic method to evaluate various cadiac diseases.