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CLINICAL EVALUATION OF RIGHT VENTRICULAR EJECTION FRACTION USING RADIONUCLIDE FIRST PASS ANGIOGRAPHY. T.Uehara,T.Nishimura,H.Naito,M.Ohta,T.Sugahara,H.Maeda,T.Kozuka,T.Kohata,T.Kamiya,M.Saito,E.Boku. National Cardiovascular Center,Division of Cardiology,Nuclear Medicine,Pediatric Medicine, Internal Medicine. Osaka.

We developed the new method to calculate right ventricular ejection fraction (RVEF) using radionuclide first pass angiography. The method is at first to assign three ROIs;(1)ROI of RVED,(2)ROI of background,(3)ROI to correct the ROI of RV at end-systole,when the right atrium pulled into the ROI of RVED.And secondary we displayed time-activity curves of these three ROIs,and then calculated RVEF by correcting (1) with (2) and (3).Detail analysis of this method and following result confirmed us that this method could be usefull practically and clinically. Using this method,we calculated RVEF of patients with various heart diseases in 150 cases. In patients who suffered from pressure or volume overload of RV such as mitral stenosis and atrial septal defect, RVEF was lower than normal cases. In patients with myocardial infarction,left ventricular ejection fraction almost decreased in proportion to infarct size, on the other hand RVEF did not so much decreased except for right ventricular infarction cases.

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A STUDY OF PULMONARY BLOOD FLOW IN PULMONARY HYPERTENSION WITH RI ANGIOCARDIOGRAPHY. K.Ishii,K.Nakazawa,T.Kobayashi,S.Horiike,S.Kusano,T.Watanabe,K.Yoda,T.Matsubayashi,S.Hiraishi,H.Nakajima,K.Yashiro,H.Ishida,S.Asaishi,K.Omori and M.Sato. Kitasato University School of Medicine and Tokyo Metropolitan Kiyose Childrens Hospital. Kanagawa and Tokyo.

Pulmonary hypertension presents difficulties when we measure left to right cardiac shunts by means of RI angiocardiography. We studied cases in which pulmonary to systemic blood pressure ratios registered over 0.5 and checked the blood flow by means of RI angiocardiography. The results are as follows: none of the 20 patients ranging in age from 10 days to 14 years were recognized as having the disease by means of the X-ray examinations. The patients were in a supine position with the gamma camera above their chests, and were injected rapidly with Tc-99m through the anticubital vein. The data from the camera were recorded on a magnetic tape attached to a small on-line digital computer system. This computer aquired and stored information on a 64X64 matrix directly from the gamma camera or the video tape. A siries of pictures at intervals of 0.2 seconds showed that there are two types of RI flow into the lung vessels. In one case, RI flowed uniformly from right to lung vessel, and in the other, RI flowed to the upper lung first, and then to lower lung in a uniform sequence. In the latter case, we should take care when studing left to right shunt ratios.

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NONINVASIVE ESTIMATION OF MITRAL STENOSIS BY USING DPI(DIGITAL PERFUSION IMAGES). T.Tanaka S.Takahashi,M.Kusumoto,S.Kimata,M.Kondo,K.Hirosawa,M.Maki,K.Kusakabe and T.Yamazaki. Heart Institute Japan and Department of Radiology.Tokyo Women's Medical College. Tokyo.

DPI(digital perfusion images) were introduced to estimate the distribution of pulmonary blood flow of the patients with MS(mitral stenosis). 27 patients with MS admitted at the Heart Institute Japan were selected and DPI were obtained by using Tc-99m MAA, GCA-401(Toshiba),and Varicam system.DPI of the patients were classified into 6 types according to the hemodynamic data and the patterns of DPI.From results the following suspection were obtained:The classification of the patients with MS into 6 types,i.e.MS with sinus rhythm,without mitral regurgitation,with mitral regurgitation(1°), with mitral regurgitation(2°-),with giant atrium, and with low out put state,might be resonable from the standpoint of the patterns of DP I.R-DPI(right lateral DPI) were one of the best projections for detecting the subtle difference of DPI and showed characteristic patterns.In each type the patterns changed gradually according to the hemodynamic changes and showed characteristic patterns in advanced stage.By using DPI it might be possible to estimate the severity of the patients. It might be well said that we could estimate noninvasively the hemodynamic variables of the patients with MS by using DPI.

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COMPARISON BETWEEN PULMONARY MEAN TRANSIT TIME AND PEAK TO PEAK TIME IN PATIENTES WITH VARIOUS HEART DISEASES. K.Ono,K.Machii,K.Ikeda,K.Owada,K.Iwaya,S.Muroi,S.Ebitani,H.Abe,T.Uchida and S.Kariyone. The First Depertment Of Internal Medicine, Fukushima Medical College. Fukushima.

The correlations between pulmonary mean transit time(PMTT) and peak to peak time (P-PT) or mean transit time from right to left ventricle(MTT(RV-LV)) derived from the results of RCG in 41 cases with various heart diseases are examined. PMTT is calculated as a defference between the mean transit time at the pulmonary artery and the left atrium. P-PT is measured at the distance from the right peak to that of left in the RCG curve on total heart region.

RESULTS 1) There is a good correlation between PMTT and P-PT.(r=0.71) P-PT tends to be longer than PMTT in normal range. But over 10 seconds, P-PT is tends to be shorter than PMTT. 2) MTT(RV-LV) has a good correlation with PMTT.(r=0.86) MTT(RV-LV) is calculated to be 70% longer than PMTT. 3) The PMTT/P-PT ratios are over 1.0 in some patients with mitral stenosis and congenital heart disease, while in the patients with other heart diseases, the ratios are under 1.0. 4) There is no correlation between PMTT/P-PT and cardiothoracic ratio.

The gap of the data between PMTT and P-PT is due to two factors, namely the defferent way and points for measure. PMTT/P-PT may be reflected in the defference of hemodynamic states in various heart diseases.