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CORRELATION BETWEEN CARDIOVASCULAR T2* MAGNETIC RESONANCE WITH LEFT VENTRICULAR FUNCTION AND MASS IN THALASSAEMIA PATIENT WITH IRON OVERLOAD

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Background:

Thalassemia is the most common haemolytic anemia in Indonesia. Haemolytic and ineffective erythropoiesis in thalassemia both cause the anemia, thus patients need regular transfusion which consequently cause haemosiderosis. Heart failure due to iron overload may cause 60-71% deaths in patients with thalassaemia major. Cardiovascular T2*MR is a non-invasive technique and gold standard to measure myocardial iron deposition. This research was aimed to determine correlation between cardiovascular T2* MR with left ventricular function and mass in thalassaemia cases with iron overload.

Materials & Methods:

A cross-sectional study was conducted from March to May 2010 at Cipto Mangunkusumo Hospital and Mitra International Hospital, Jakarta. Physical examination, electrocardiography, echocardiography and cardiovascular T2* MR were performed in all thalassaemia patients with iron overload.

Results:

A total of 30 regularly transfused patients, aged 13-41 years old were examined. Two third of patients with thalassemia β major and one third with β HbE. Mean (SD) pulse rate was 88,3 (9,4) bpm, systolic blood pressure was 90-130 mmHg and diastolic blood pressure was 50-90 mmHg, and haemoglobin 6,3-11,5 g/dl. Serum ferritin 732.3-17912 ng/ml, mean (SD) serum ferritin from 12 months prior to study were 6405,5 (3984,9) ng/ml. Hypertrophy of the left ventricle was noted in 4 patients and PVC in 1 patient. Diastolic dysfunction occurred in 8 patients with normal systolic function in all patients. Increase in left ventricular mass index was found in 3 patients. Cardiovascular T2*MR ranged between 8.98-55.04 ms, with mean (SD) 24.26 (11.24) ms. T2*MR value below 20 ms were seen in 14 patients. There was a significant moderate correlation between E/A ratio and T2*MR ($r=0.471$; $p=0.009$). There was significant mild correlation between serum ferritin and T2*MR ($r= -0.386$; $p=0.035$) and moderate correlation between serum ferritin and E/A ratio ($r= -0.425$; $p=0.019$).

Conclusion:

There was significant correlation between E/A ratio with T2*MR and between serum ferritin and T2*MR, E/A ratio. No other correlation could be demonstrated.

Keywords:

cardiovascular T2*MR, diastolic dysfunction, iron overload