Purpose

Cardiovascular Magnetic Resonance (CMR) allows an accurate and reproducible quantification of left ventricular (LV) parameters [1]. In Thalassemia major (TM) patients different “normal” LV values have been reported due to chronic anemia and eventually pre-existing iron burdens [2]. Moreover, in this population it is unknown the influence of sex and age on LV parameters and no ranges of normal have been reported using MASS® software. The aim of this study was to establish the ranges for normal LV volumes, mass and ejection fraction normalized to the influence of body surface area (BSA), age and sex from CMR in a large cohort of well-treated TM patients without myocardial iron overload.

Methods

Among the 923 TM patients who underwent CMR within the Myocardial Iron Overload (MIOT) network [3] for the assessment of cardiac iron, function and fibrosis, we selected 142 patients with no known risk factors or history of cardiac disease, normal electrocardiogram, no myocardial fibrosis and no myocardial iron overload (all the cardiac segments with a normal T2* value). Moreover, we studied 71 healthy subjects matched for age and sex. LV function parameters were quantitatively evaluated in a standard way by SSFP cine imaging using MASS® software [4]. LV end-diastolic volume, end-systolic volume, stroke volume, and mass were normalized to BSA (EDVI, ESVI, SVI, massI).

Results

In TM patients all LV volumes indexes were significantly larger in males than in females. The EF was not different between the sexes (Table 2).

In males the ESVI and the EF were significant different among the age groups (P=0.006 and P=0.001, respectively) (Figure 1). In females no significant differences were detected among the age groups (Figure 2).

Conclusions

In a large cohort of well-treated TM patients significant differences in LV parameters compared to controls were limited to males <14 yrs and >30 yrs. Appropriate “normal” reference ranges normalized to BSA, sex and age should be used to avoid misdiagnosis of cardiomyopathy in TM patients.

References


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