



Abnormal Left Ventricular Rotation in Women with Thalassemia

Rotación Ventricular Izquierda Anormal en Mujer con Talasemia

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SUMMARY

Introduction: Iron induced cardiomyopathy is well documented in patients with thalassemia. Conventional echocardiogram associated with new technologies has provided parameters for early detection of changes in left ventricular function. **Case report:** Woman, 50 years old, asymptomatic, diagnosed with thalassemia, shows normal conventional echocardiogram and tissue Doppler parameters but altered torsion and rotation parameters using speckle tracking. **Comments:** Early echocardiographic findings using speckle tracking in patients with thalassemia is important and may improve prognosis in these patients.

Descriptors: Cardiomyopathy, Dilated; Cardiomyopathy, Restrictive; Thalassemia; Echocardiography, Doppler

RESUMEN

Introducción: Cardiomiopatía inducida por el hierro es bien documentada en pacientes con talasemia. La ecocardiografía convencional asociada a nuevas tecnologías puede detectar, precozmente, alteraciones en la función ventricular izquierda en esos pacientes. Relato de caso: Mujer, 50 años, asintomática, con diagnóstico de talasemia, muestra parámetros ecocardiográficos convencionales y Doppler tisular normales con alteración en la torsión y rotación al speckle tracking. Comentarios: La detección precoz de alteraciones de la función cardíaca por medio de nuevas tecnologías, en pacientes con talasemia, han demostrado importancia diagnóstica.

Descriptores: Cardiomiopatía Dilatada, Cardiomiopatía Restrictiva, Talasemia, Ecocardiografía Doppler

INTRODUCTION

Iron induced cardiomyopathy is well documented in thalassemia¹. Cardiac complications are among the serious clinical conditions affecting these patients, being also the second leading cause of death². The early detection of such abnormalities has prognostic significance, since aggressive therapy can be instituted earlier in the course of the disease. Conventional echocardiography associated with new technologies with speckle tracking has offered parameters for early detection of changes in systolic and diastolic function of the left ventricle (LV).

CASE REPORT

Female patient, Afro-descendent, 50 years, diagnosed with beta thalassemia, asymptomatic, with no history of hypertension or other chronic disease, sought the cardiologist for routine evaluation. There is no reported use of drugs. At clinical examination BP: 120 x 80 mmHg, HR: 75 bpm. Cardiac auscultation: regular pace in 2T. Laboratory tests were normal, except for hematocrit of 30 mg / dl and hemoglobin of 10%. Cardiology examinations: normal ECG, stress test with good functional capacity, physiological pressure curve,

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absence of arrhythmias. At echocardiography the patient had EF of 68%, LV mass index of 82.10 g / m², relative wall thickness of 0.23; mitral flow data: E = 0.80 m / s, A = 0.58 m / s, E' = 0.15 m / sec, E/E' = 5.33, DT = 143 ms, wave duration A = 100 ms, pulmonary vein S = 0.69 m / s, D = 0.69 m / s, Air = 3.32 m / s, Duration = 122 ms. Normal cavity diameters, except for left atrial volume of 30.5 ml / m². Longitudinal myocardial strain (LMS) was measured by using the apical four, two and three chambers view and mechanics of LV twist by transverse basal and apical view. The LV twist is defined as the difference in the apical and basal rotation. Parameters obtained with the speckle tracking technology (STE): Mean longitudinal peak systolic strain of -20.2%, normal radial and circumferential strain. Basal rotation in early systole and twist are reduced. Baseline untwist rate, recoil and apical recoil are all normal.

DISCUSSION

Thalassemia is among the most common genetic disorder in the world, affecting approximately 220 million people, of which 15% have a silent form³. It corresponds to a syndrome of broad phenotypic spectrum. Tissue damages occur by increased gastrointestinal iron reabsorption and

blood transfusions. Dilated cardiomyopathy is the leading cause of death. In some patients, pulmonary hypertension and restrictive cardiomyopathy occur¹.

Echocardiographic parameters such as ejection fraction (EF) and fractional shortening did not show statistically significant changes in the early evaluation of thalassemia patients, but early changes are identified by pulsed Doppler and tissue Doppler⁴. Association between transmitral flow patterns and tissue Doppler of the mitral annulus with BNP levels have been compared^{5,6} and indicate to be important in the early detection of cardiac dysfunction in patients with thalassemia. However, even these parameters are limited by the angle dependence and by suffering influence from loading conditions, which is an important consideration, as thalassemia represents a state of high output.

The use of new technologies in the assessment of LV function, such as tissue velocity imaging (TVI) and strain imaging (SI) have been useful in the early detection of abnormalities and myocardial strain in these patients. Patients with thalassemia show relevant systolic dysfunction in the lateral and septal walls, early detected by this method, even in the absence of coronary artery disease or heart failure². In asymptomatic young thalassemia patients, rates derived

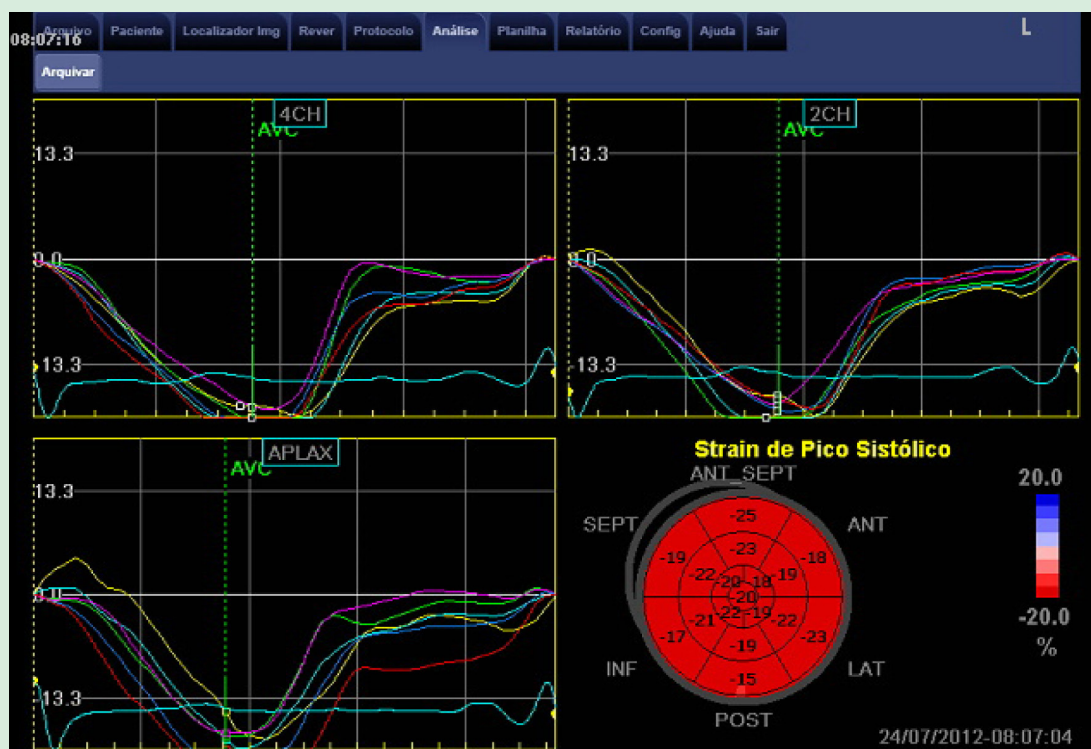


Figure 1: Longitudinal strain showing apical, 4, 2, and longitudinal views, as well as the polar map without changes.

from the study of myocardial strain by means of SI proved to be more sensitive indicators of subclinical myocardial dysfunction than conventional measures in M-mode, Doppler-derived indexes, and tissue Doppler ⁷.

Our patient showed a different pattern from those described in these papers with normal longitudinal strain and absence of regional abnormalities in myocardial strain (Fig-

ure 1), but with a significant decreased basal rotation in early systole and twist (Figure 2).

Although the determinants of left ventricular mechanics are not fully understood, incompletely understood, they have been mentioned as a possible parameter for early detection of changes of LV contraction and, therefore, useful in the evaluation of these patients.

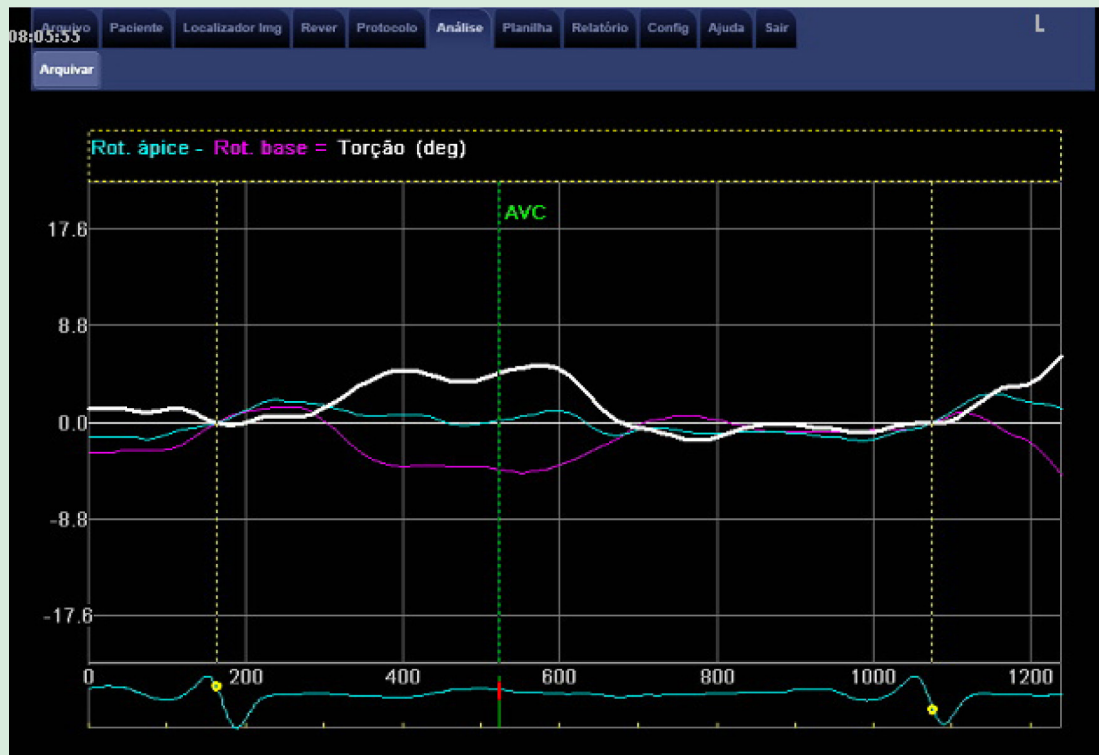


Figure 2: Basal rotation and twist angle decreased.

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