Editorial

A sensitive test for early myocardial iron loading

A.V. Hoffband

Royal Free Hospital, London, UK

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A third of patients born with thalassaemia major in the UK die, usually from iron-induced cardiomyopathy by the age of 35. Daily subcutaneous infusions of the iron-chelating drug desferrioxamine have been used since 1976 to prevent iron-induced organ damage, especially to the heart, but also to the liver and endocrine organs. Non-compliance is, however, the major cause for failure of this iron-chelating therapy in developed countries and the high cost of desferrioxamine and the complicated mode of administration accounts for its unavailability in poorer countries.

Although it may be possible to reverse iron-induced cardiac damage by increasing the intensity of chelating therapy, this is often unsuccessful in late stage disease when clinical features of cardiac failure or arrhythmia are already present. Clinical examination, electrocardiography, MUGA scanning, conventional echocardiography and 24 h cardiac monitoring have been used to detect cardiac damage at an early stage, but none of these conventional tests have proved sufficiently sensitive and reliable. Most recently Anderson et al. have shown that MRI using the T2* technique can detect early myocardial iron loading, even before symptoms or signs occur and before there is a need for cardiac medication. This technique is, however, too complicated and expensive for use in the poor countries of the world where thalassaemia is most frequent. Vogel and colleagues hypothesize that at early stages, iron deposition is predominantly in the septum with other areas of the ventricles and heart being affected at later stages. Further studies will be needed to confirm this theory.

Previous data using digitized M-mode echocardiographic traces showed this could detect abnormalities in contraction and relaxation at an early stage in iron-loaded patients. The present study extends these observations and establishes tissue Doppler echocardiography, with careful measurement of myocardial velocities in the ventricles and septum as a sensitive test for early myocardial iron loading. Increased iron-chelation therapy with desferrioxamine or with the oral chelator deferiprone or with combined therapy of the two drugs could then be offered to these patients before severe, life-threatening cardiac damage develops. Providing these observations are substantiated in further larger studies it is to be hoped that measurement of regional ventricular wall function by this or similar techniques will be used to monitor and direct chelating therapy in centres treating patients with...
thalassaemia major and other iron-loading anaemias in both the developed and poorer countries of the world.

References


