Multidisciplinary approach in a case of successful surgical treatment of a voluminous intracardiac fungal mass in an infant: reply

With great interest we read and appreciate the comments made by Dr Troise with regard to our report entitled ‘Voluminous mycetoma in a newborn with Down Syndrome: role of echocardiography’.1

He highlights positive collaboration they had set up, at that time, offering cardiac surgical treatment to the patient referred by Hospital OO.RR of Foggia. At that time, a tele-echocardiographic counselling was promptly requested. This opportunity existed thanks to the Italian Ministry of Health research funds, which permitted similar audio–video ISDN-based devices to be installed in the main paediatric institutions in the Province of Puglia and linked in a wide regional network. Today, moreover, the widespread availability of ADSL broadband PC-based systems allows transmission of data in a more reliable and less complex way.

According to this report, the positive impact of telemedicine on health assistance has confirmed by the possibility to optimize the organization of transfer of the critical neonates, the better management of surgical activity, and the delicate phase of counselling. We highlight the concept, in full agreement with Dr Troise, that surgical ablation of the mass associated with anti-infectious medical treatment has been a winning strategy. But, we would like to comment on the common practice in many Neonatologic Units, due to the chronic lack of available paediatric cardiologists, the neonatologists with experience in ultrasound practice echocardiogram.

Echocardiography of congenital and acquired paediatric heart disease is an operator-dependent imaging technique that requires high levels of technical and interpretive skills to maximize its diagnostic accuracy. In our opinion, the physicians who specialize in echocardiography of paediatric heart disease must undergo extended training in this domain. The American College of Cardiology (ACC) Pediatric Cardiology/Congenital Heart Disease Committee and the ACC Training Program Directors Committee have jointly developed new recommendations for training in paediatric cardiology.2 More recently, a framework of necessary knowledge and training for sonographers and physicians has been provided by the Task Force of the Pediatric Council of the American Society of Echocardiography.3

References

Michele Correale
Department of Cardiology
University of Foggia
viale L Pinto, 1
71100 Foggia
Italy
E-mail address: opsfco@tin.it

Riccardo Ieva
Department of Cardiology
University of Foggia
viale L Pinto, 1
71100 Foggia
Italy

Matteo Rinaldi
Hospital OO.RR Foggia
Neonatal Intensive Care Unit
Foggia
Italy

Giuseppe Rinaldi
Hospital OO.RR Foggia
Neonatal Intensive Care Unit
Foggia
Italy

Matteo Di Biase
Department of Cardiology
University of Foggia
viale L Pinto, 1
71100 Foggia
Italy
Tel: +39 088 173 3652
Fax: +39 088 173 5424
References


Osama I.I. Soliman
Department of Cardiology
Thoracenter
Erasmus University Medical Center
Rotterdam
The Netherlands

Marcel L. Geleijnse
Department of Cardiology
Thoracenter
Erasmus University Medical Center
Rotterdam
The Netherlands

Folkert J. ten Cate
Department of Cardiology
Thoracenter
Erasmus Medical Center Rotterdam
'S-Gravendijkwal 230
3015 CE
Room Ba304
Rotterdam
The Netherlands
Tel: +31 10 7035669
Fax: +31 10 7035498
E-mail address: f.j.tencate@erasmusmc.nl
doi:10.1093/ejechocard/jen021
Online publish-ahead-of-print 14 March 2008

Echocardiographic selection of candidates for cardiac resynchronization therapy: the lack of evidence! Reply

We appreciate the interest in our work,1 in which we have attempted to delineate a possible algorithm to use tissue Doppler imaging (TDI)-guided cardiac resynchronization therapy (CRT) as a complement to evidence-based clinical guidelines in the management of patients with severe heart failure.

Dr Soliman et al. suggest that echocardiographic left ventricle (LV) dyssynchrony can be assessed by the 'spectral' TDI lateral-to-septal delay whereas 'colour-encoded' TDI (regardless of the LV segment model used) is of limited value because several inherent inherited physiological and technical limitations. Thus, they raise the question that in the absence of sound and prospective multi-centre echocardiographic data, any advice to use TDI (colour-encoded TDI?) for patient selection is speculative.

Actually, I believe that 'scientific' progress and methods are not only related to 'multi-centre' data, even if themselves statistically important.2 Anyway, unpublished reports should be considered as preliminary data3 since analyses may change in the final publication. In addition, we should consider that the guidelines based on large, randomized, controlled studies are not inflexible, and they do provide the best first step. Patients vary in complexity and degree of illness, as they do in their individual responses to medication and other treatment modalities, so statistical data must be gathered properly and then corrected to reflect variations in patient complexity. In common, clinical practice I often realize evident benefits in the individual heart failure (HF) patient after CRT with improved synchronicity by both spectral and colour-encoded TDI (and patients are 'real world'!). Lastly, although I agree with them about TDI technical limitations, I verify their opinion on colour-encoded TDI is somewhat contradicted by the current literature.

The prognostic importance of systolic dyssynchrony in predicting short-to-medium-term response was initially reported by Bader et al.,4 who examined HF patients with EF of ≤45% and prolonged QRS duration who were followed for 1 year. Intraventricular delay was examined by spectral pulsed TDI in the apical four- and two-chamber views to document the LV long-axis motion and was found to be the most important independent predictor of HF events.

The important prognostic value of systolic dyssynchrony was also confirmed in patients with HF and narrow QRS complexes. In a study of HF patients with EF <35% and QRS duration ≤120 ms,5 intraventricular dyssynchrony was measured from both basal and middle LV segments on apical four- and two-chamber views, and the standard deviation of the time to peak systolic velocity (Ts-SD) was derived from the eight LV segments through off-line analysis. From the receiver-operating characteristic curves, a Ts-SD value of ≥37 ms had a sensitivity of 68% and specificity of 71% to predict event-free survival.

Other studies suggested that assessment of LV mechanical delay in HF patients provides prognostic information independent of electrical delay on the surface electrocardiogram. In fact, systolic dyssynchrony is a common condition in HF, with a prevalence range from 27 to 43% depending on methodologies. Most of the indices of dyssynchrony with defined cut-off values were derived from TDI and related technologies.6 These parameters mostly examined the time to peak myocardial contraction from 2 (e.g., septal-to-lateral wall delay) to 12 (Ts-SD or Ts-diff) LV segments. The assessment of systolic dyssynchrony by TDI before pacemaker implantation may help to predict short-to-medium-term echocardiographic responders with a reasonably high sensitivity (87–97%), but variable specificity (55–100%).

Apart from predicting responders after CRT, TDI also has a role in predicting the long-term clinical outcome. The link between baseline systolic dyssynchrony and long-term prognosis in HF patients could be explained by the fact that those patients with severe systolic dyssynchrony had early LV reverse remodelling. LV reverse remodelling was the only independent predictor of all-cause or cardiovascular mortality by Cox multivariable regression analysis.7 Currently, the role of dyssynchrony assessment by applying tissue-Doppler or non-Doppler strain to predict CRT response is a topic of further investigation,8,9 although strain rate did not appear to be useful.10 However, the use of the various echo modalities requires sound knowledge of the pathophysiology of dyssynchrony and of the benefits and limitations of each ultrasound technique.

In conclusion, I do believe that although myocardial velocity curves can be constructed either on line from spectral pulsed TDI or off line from two-dimensional colour TDI, the latter approach is preferable, because multiple segments can be compared within the same heart beat. Systolic dyssynchrony assessment not only predicts HF events and mortality, but may also predict favourable LV reverse remodelling and long-term clinical outcome. Although a number of post-processing techniques can be derived from TDI, such as strain and strain rate, the clinical utility of these modalities as prognosticators has not yet been established.

Thus, on the basis of literature and clinical data, I would suggest a more appropriate letter title: Echocardiographic selection of candidates for cardiac resynchronization therapy: 'A new field still in progress' instead of 'The lack of evidence'.

References

1. Vitarelli A, Franciosa P, Rosanio S. Tissue Doppler imaging in the assessment of selection