

Interview

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First, I would like to thank Prof. Andrés Riera for the honorary invitation to participate in this important event about Heart Failure (HF). My name is João Roberto Breda, and I'm a cardiovascular surgeon from the University Hospital of the ABC Medicine School, and I have connections with a CHF group from the Federal University of São Paulo, - Paulista Medicine School, under the guidance of Prof. Dr. Enio Buffolo.

I have received from Dr. Andrés a list of 9 questions about this topic, which will be objectively answered below.

1. Which are the preventive measures for HF? The prevention for this syndrome is closely related to the control of certain risk factors. Diseases such as systemic hypertension, diabetes mellitus, lipidic alterations stand out, besides settings such as smoking, obesity and sedentarism, which essentially imply changes in the lifestyle of people.
2. Currently, what is the role of alternative treatments (not transplantation) in the management of refractory CHF? This question, besides being topical, is extremely interesting and is increasingly raising a greater interest in specialists who manage this special group of patients, i.e. advanced heart disease carriers. Thus, the pharmacological management of CHF has displayed good results, mostly in the initial stages of the disease, and it is based on the knowledge of the pathophysiological and neurohumoral mechanisms involved in this syndrome. However, this form of management, in spite of delaying the progression of the disease, does not present an expectation of healing. The definitive surgical treatment is represented by heart transplantation, which due to accurate indication criteria and a small number of donors, is not available for all those who need this therapeutics. For these reasons, alternative surgical treatments were developed, with the aim of maintaining these patients alive until a permanent treatment is feasible, or sometimes, even liberating them from having to undergo heart transplantation.
3. What is the significance of coronary revascularization, ventricular restoration and mitral valve regurgitation correction in CHF management? It is essential to understand the pathophysiology of cardiomyopathies with ischemic origin. After myocardial infarction, the

process of ventricular remodeling begins, which in some circumstances may lead to ventricular dilatation with substitution of cardiac fibers by fibrosis. Due to ventricular dilatation, an alteration may occur in the usual position of papillary muscles, with loss of parallelism, leading to the appearance of functional mitral regurgitation. Thus, the treatment of ischemic cardiomyopathy should approach all these alterations, with coronary revascularization, mitral regurgitation correction and ventricular geometry restoration.

4. Isolated coronary revascularization is superior to revascularization associated with ventricular restoration in the treatment of ischemic cardiomyopathy? The role of isolated revascularization of the myocardium in carriers of ventricular dysfunction has been well established in literature by several papers, such as the CASS study. Meanwhile, the survival curve of patients after this procedure worsens as the extent of ventricular dysfunction increases in the pre-operative stage (left ventricle ejection fraction below 30%). When this specific group of patients is analyzed, the presence of a greater extent of ventricular dilatation is observed, which may be proven by a measurement of left ventricular end systolic volume index, a fact that is likely related to a greater phenomenon of ventricular remodeling. Thus, surgical procedures capable of decreasing the ventricular size, by restoring its geometry, become extremely important. These procedures, initially called *SAVER (Surgical Anterior Ventricular Restoration)*, were performed by 13 heart surgery centers around the world in the so-called *RESTORE group*, with good results in terms, mostly, of functional class and survival improvement of these patients. The results obtained in this work indicate the need of a prospective, randomized study capable of comparing 3 treatment modalities in ischemic cardiomyopathy, i.e. isolated coronary revascularization, revascularization associated to ventricular restoration and pharmacological management. This study was designed in the *STICH trial* and we are still waiting for its results, to have a more definite answer.
5. Why patients with ischemic cardiomyopathy and viable muscle not always recover their performance after revascularization? The improvement of ventricular performance after revascularization does not depend only on the amount of viable muscle, but also on the extent of ventricular remodeling triggered after the ischemic event. This may be assessed by the left ventricular end systolic volume index, since the greater the index, the less the improvement of ventricular function is. In the paper by Bax et al., 33% of patients with myocardial viability did not have improvement after revascularization, corresponding to those with a greater extent of ventricular dilatation. This fact may justify the need of

ventricular geometry restoration procedures in association with coronary revascularization, in severe ischemic cardiomyopathy carriers with increase of ventricular diameters.

6. When do we have to indicate revascularization, ventricular restoration and mitral regurgitation approach together? In fact, this discussion may deal with mitral regurgitation approach in cardiomyopathy of ischemic origin. The appearance of functional mitral regurgitation is directly related to ventricular dilatation, unlike ischemic mitral regurgitation, which involves alteration of the components of the mitral complex. Thus, in certain situations, ventricular geometry restoration may determine the abolition or improvement in the extent of mitral regurgitation, producing doubts on the need of some additional approach on the mitral valve. This becomes more evident in moderate mitral regurgitations (degrees 2 or 3), and for this reason, our policy has evolved into the use of intra-operative transesophageal echocardiogram, where after ventricular restoration, the extent of mitral regurgitation and the need of valvular surgery or exchange is evaluated.
7. When do we indicate revascularization in association with mitral valve approach? The combined procedure of revascularization and mitral valve approach is evidently associated to a greater morbi-mortality, essentially due to a greater surgical time, aortic clamping and extracorporeal circulation. Thus, an accurate indication must be carefully assessed. According to data from the European Society of Heart Surgery, mortality in a conventional operation for mitral exchange may reach 6%, and when it is associated to coronary revascularization, this number increases to 14%. Some papers show that isolated revascularization may produce a decrease in ventricular volume and, consequently, a decrease the degree of mitral regurgitation (degrees 2 and 3 in pre-operative stage). Therefore, the operation associated would be indicated only in severe mitral regurgitation (degree 4) settings in pre-operative stages.
8. The use of left internal thoracic artery is superior to the saphenous vein in patients with ventricular depression? The use of both thoracic arteries in coronary revascularization is a predictive factor of more survival, less reintervention rate (represented by coronary angioplasty) and reoperations. When the subset of patients with ventricular dysfunction is compared, a better survival is observed in the set where both thoracic arteries were used. Meanwhile, it is necessary to indicate this surgical strategy individually, mainly in diabetic or obese patients, due to a greater risk of infection.

9. When do we have to indicate heart transplantation in refractory HF carriers? The indication of heart transplantation is essentially the characterization of terminal cardiomyopathy, and it takes into consideration factors beyond the cardiological diagnosis *per se*, such as cultural and socio-economic level, as well as psychological aspects of the candidate to receive the heart. These rigorous criteria make alternative procedures attractive, in such a way that the indication of transplantation may be associated to factors that may contraindicate such procedures, such as for instance, absence of ischemic areas for revascularization, absence of improvement in ventricular contraction after viability tests, and very depressed right ventricular performance.