Plasma ANP and systolic function in myocardial infarction

Dr Korup et al. reported an interesting study in acute myocardial infarction, concluding that there is a significant correlation between plasma ANP and systolic function, whereas there was no corresponding relationship between plasma ANP and diastolic function\(^4\).

We reported\(^2\) the same correlations between ANP and systolic function indexes, and between ANP and left ventricular diastolic volume/\(^2\), all assessed by echocardiography. However, the lack of correlation between atrial dimension and ANP in the study of Korup et al. is not totally convincing, even taking into account the table data presented\(^1\), which show a fair positive correlation; moreover we\(^2\), and others\(^4\), quite often find weak correlations between LAD/\(^2\) and ANP; perhaps it would have been better had Dr Korup's group used indexed LAD to correlate with ANP.

In addition, a significant correlation between ANP and diastolic measurements, notably E/A ratio, is observed in congestive heart failure\(^3\), and the clinical improvement is associated both with a decrease in the abnormality of diastolic echocardiographic measurements and with the decrease of ANP\(^4\).

A correlation between ANP and heart rate, which we reported in sinus rhythm patients, both in the control groups and in congestive heart failure, but not in patients with chronic atrial fibrillation\(^3\), was not observed in the study of Korup et al.\(^1\). If patients with arrhythmias had been included, the correlation between heart rate and ANP may have been lacking in groups of patients considered globally.

Finally, an additional point should be taken into account, that of the close positive relationship present in many studies, and in the study by Korup et al.\(^1\) between age and ANP. This can affect the final results in many ways, particularly in groups with a wide age range\(^3\).

G. M. TROVATO
G. CARPINTERI

References


A reply

The main purpose of our study was to relate systolic and diastolic echocardiographic parameters to ANP. Interestingly, however, Drs Trovato and Carpinteri discuss how heart rate, left atrial diameter and age relate to ANP. Revising our data we find a positive correlation between ANP and left atrial diameter (r=0.49; P<0.01), indexed left atrial diameter (r=0.51; P<0.01) and age (r=0.42; P<0.05). We find no correlation between heart rate and ANP (r=0.24; P>0.10). All our patients were in sinus rhythm at the time of examination.

In a univariate analysis there is a negative correlation between age and end-systolic volume index (r=0.53; P<0.01). This prompted us to perform a multivariate analysis to elucidate which parameter is most strongly related to ANP. The multivariate analysis included the end-systolic volume index, the indexed left atrial diameter and age and showed that the end-systolic volume index (P<0.005) and the indexed left atrial diameter (P<0.01) are independently related to ANP, whereas age is not (P>0.42).

Left atrial thrombus in heart transplant recipients

We read with interest the article by Derumeaux et al.\(^1\) concerning the incidence, predictive criteria and diagnosis of atrial thrombus after heart transplantation. In this excellent report it is suggested that transoesophageal echocardiography is the procedure of choice in the evaluation of spontaneous echocontrast and atrial clots, and routine follow-up transoesophageal echocardiography is advised in all heart transplant recipients 6 months after surgery. In addition, it is proposed that total orthotopic heart transplantation with caval anastomosis may be useful to prevent thrombi formation.

We have previously reported our experience on the incidence, aetiology, diagnosis and management of intracardiac thrombi after heart transplantation\(^2\) and have suggested that atrial fibrillation of the recipient atrial component could contribute to the formation of thrombi. We recommended transoesophageal echocardiography in all transplant recipients during the first 3 months after surgery, because in our experience this is the time at which the risk of thrombus formation is greatest. Regarding treatment, we have proposed the use of acenocoumarol (international normalized ratio 2.5 to 3). After 3 to 6 months, we repeat the transoesophageal echocardiogram, and if the thrombus has disappeared or has diminished significantly in size we replace acenocoumarol with ticlopidine. In relation to the measures proposed to prevent thrombi formation after transplantation, a previous report has shown that bivacal orthotopic heart transplantation does not avoid thrombi formation\(^3\).

We would ask Derumeaux et al. the following questions: Did they find any relationship between recipient atrial rhythm and the presence of atrial thrombus? Why is routine echocardiography recommended 6 months after surgery instead of after 35 months, which is the average time postsurgery when thrombi are diagnosed? What kind of anticoagulant and dose is recommended and for how
long must anticoagulants be maintained? Derumeaux et al. conclude that one of the predictive factors for a thromboembolic episode is the time since transplantation. What is their explanation for this finding?

A. L. FERNÁNDEZ GONZÁLEZ
J. M. HERREROS
Servicio de Cirugía Cardíaca,
Hospital General de Valencia,
46014 Valencia, Spain

References

A reply

We read with interest the comments of Fernández-González and Herreros concerning our article[1]. This letter is to answer their questions:

Question 1: We did not find any relationship between recipient atrial rhythm and the presence of atrial thrombus. At the time of the study, only seven patients demonstrated atrial fibrillation in the recipient atrium as proven by electrophysiological evaluation. Among these patients, only two had a left atrial thrombus.

Question 2: Thrombi were diagnosed 35 months after surgery at the time of the TEE study but several arguments support the fact that they occurred earlier. One of these arguments is the time at which thromboembolic episodes occurred. We recently reported on a larger series of transoesophageal examinations comparing standard transplantation by the Lower and Shumway technique with total transplantation by bicaval anastomosis.[2] We demonstrated that thromboembolic events occurred only in patients with standard transplantation and that five of the 11 thromboembolic events occurred within the first 6 months, suggesting therefore a very early formation of atrial thrombi. In this paper, we also demonstrated that bicaval orthotopic heart transplantation was highly effective in avoiding thrombi formation and in restoring normal atrial function. We therefore disagree with the conclusions of El Gamel.[3]

Question 3: Regarding treatment, we used heparin (international normalized ratio 2:3 to 3) and we replaced heparin by ticlopidine only if the thrombus had completely disappeared at the 6-month TEE control.

Question 4: In this series of 64 patients, statistical analysis was the only predictive factor for a thromboembolic episode; however, the time elapsed since transplantation was significantly higher in cases with embolism. One explanation for this observation is the fact that with time, the retained atria have rigid and fibrotic walls which are less compliant, therefore increasing blood stasis and promoting both spontaneous echo contrast and clotting in the left atrium. However, the statistical results depend on the series of patients. In a larger series (n=75),[2] there was no predictive risk factor for thromboembolic events as regards time from transplantation, left atrial diameter, left ventricular ejection fraction and haemodynamic data.

G DERUMEAUX
Service de Cardiologie,
Hôpital Charles Nicolle,
Rouen, France

References