

Mitral valve surgery in the elderly: new insights and unanswered questions

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Online publish-ahead-of-print 26 October 2010

This editorial refers to ‘A propensity score-adjusted retrospective comparison of early and mid-term results of mitral valve repair versus replacement in octogenarians’[†], by J. Chikwe et al., on page 618

A growing problem searching for solutions

Mitral regurgitation (MR) in the elderly population is expected to become a relevant health problem in the future, considering the constantly increasing ageing of the population and the rapid increment of the prevalence of heart failure. According to recent data, moderate or severe MR is present in ~10% of the general population above 75 years of age.¹ Conversely, the Euro Heart Survey shows that only a minority of elderly symptomatic patients with severe MR are referred for surgical treatment, since the operative risk is considered too high and the benefit of surgery has not been definitely demonstrated.² As a consequence, there are very few publications on octogenarians submitted to mitral surgery, and the available data are either related to small series or include heterogeneous patients,^{3–5} making speculations with regard to treatment strategies inconclusive.

In this scenario, the study of Chikwe et al.⁶ dealing with results of mitral valve surgery in octogenarians is of great interest and is certainly timely. A consecutive series of 322 octogenarians operated on in two high volume institutions with well-recognized expertise in the field of mitral valve disease, over a period of 10 years, is retrospectively analysed. The combined series provides a sufficient data set for statistical analysis and therefore can provide important information at least in the larger subgroups of patients: those with degenerative and those with functional MR. Other subgroups of patients (rheumatic disease, endocarditis, degenerated bioprostheses, etc.) are under-represented and cannot be analysed separately and conclusively.

Conclusions regarding the type of treatment (repair vs. replacement) can only be drawn for patients with degenerative MR,

because patients with functional MR have been almost exclusively treated with undersized annuloplasty. An advantage of combining the series from two institutions is that different types of repair (‘Carpentier’s methods’ vs. chordal replacement) and different approaches (conventional sternotomy vs. a minimally invasive approach with peripheral cannulation) can be evaluated and compared.

About half of the patients in this combined series had mitral valve surgery combined with coronary artery by-pass grafting, reflecting the prevalence of significant coronary disease in the elderly population. Approximately one-third of patients had concomitant tricuspid valve repair, and a proportion of patients (not defined in the paper) were simultaneously submitted to surgical ablation of atrial fibrillation.

Taken together, the patient material including different clinical profiles and mitral pathologies is of great interest, with the potential to provide new and useful information for decision-making. Although new knowledge is produced, the design of the study is insufficient to contribute to the clarification of some controversial issues, and a number of basic questions still remain unanswered.

Risk and benefit of surgery

This study confirms that the overall operative mortality in octogenarians submitted to mitral valve surgery is high. Only in patients with degenerative mitral valve disease treated with an isolated elective repair is the surgical risk apparently acceptable, with a mortality of ~5% at 30 days. Surprisingly, however, mortality at 3 months is already more than double this (almost 13%), indicating that octogenarians are not likely to recover easily from the trauma of open heart surgery. Patients surviving at 30 days may die after the first post-operative month during a prolonged hospitalization period due to complications directly related to the operative procedure. Any difference in mortality and/or complication rate between patients operated on with conventional midline sternotomy and those who had a mini thoracotomy approach is not reported. As expected, emergency surgery is also associated with a prohibitive risk in octogenarians, and stabilization of the

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[†] doi:10.1093/eurheartj/ehq331

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clinical conditions with optimal intense medical treatment, ventilatory support, and intra-aortic balloon counterpulsation, if necessary, is highly desirable.

The study confirms that in institutions with experience in valve repair, the mitral valve can be effectively reconstructed in octogenarians, avoiding prosthesis-related problems. Excellent valve function can be restored using either the classical techniques introduced by Carpentier or the implantation of artificial chordae. In addition, in patients with degenerative MR, valve repair compared with valve replacement is associated with a higher survival both early and late post-operatively. Valve replacement even with a bioprosthesis is an independent predictor of mortality in octogenarians with degenerative mitral valve disease. A practical implication of these findings is that the mitral valve should also be repaired whenever possible in the very old population, in contrast to the common perception in the medical and surgical community. This assumption would be stronger if this study had provided echocardiographic mitral valve function assessment after discharge from hospital. Fragile tissues and valvular calcifications often present in old patients are likely to preclude satisfactory long-term valve function after repair: therefore, the question of the durability of mitral repair remains unanswered. The absence of echocardiographic data in the follow-up is particularly regrettable in patients with ischaemic MR submitted to an undersized annuloplasty. In this clinical context, recurrence of mitral regurgitation is well known to occur in a considerable proportion of patients at any age and is associated with a significant reduction in survival.⁷ Considering the extremely poor outcome of this group of patients in this series (fewer than half alive after 1 year), the question remains of whether valve replacement could be a better option in this subgroup of patients.⁸

Another relevant finding in this series is that for patients submitted to mitral valve surgery the operative risk is significantly higher when concomitant coronary artery by-pass grafting is carried out. A hybrid approach, contemplating a percutaneous coronary intervention prior to surgery when feasible, seems to be an appealing solution to reduce mortality in this complex situation.⁹

In a number of patients, surgical ablation of atrial fibrillation was carried out, but the effect of this procedure on the arrhythmia is not reported. Although restoration of sinus rhythm and avoidance of anticoagulation are expected to have a favourable impact on the prognosis of octogenarians, the opportunity to perform surgical ablation of atrial fibrillation in this age group remains unproven.

Considering that in elderly patients mitral valve surgery is only indicated for relevant symptoms,¹⁰ the most important limitation of this study is the absence of any information on the clinical condition of the surviving patients and on their quality of life. Quality of life is an important issue in the elderly population and it has been frequently assessed in clinical studies dealing with transcatheter valve therapy, whereas after mitral valve surgery it has been rarely investigated.¹¹

Looking for alternatives

Although the study by Chikwe *et al.* represents a valuable contribution to many aspects of current knowledge, the question of whether mitral valve surgery is beneficial to octogenarians remains unanswered. The mortality at 3 months is rather high

even in patients with degenerative disease, and the benefit of surgery is insufficiently demonstrated, since reduction of symptoms is not documented and quality of life is not assessed.

In this scenario, transcatheter treatment of MR could play a relevant clinical role in the near future. Initial reports suggest that the reduction in invasiveness of transcatheter techniques is associated with low procedural risk and this can be beneficial in the subset of the very old population.^{12–14} Optimal treatment of heart disease in the elderly should aim at preserving natural life expectancy while re-establishing a reasonable quality of life. Whether this will be the result of surgery or percutaneous intervention is difficult to predict at this stage: the answer will come from well designed comparative studies.

Conflict of interest: none declared.

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