Impact of the ageing population on cardiac surgery in the UK

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In their article, Ngaage and colleagues (see pages 28–32) discuss the influence of an ageing population on care and clinical resource utilisation in cardiac surgery in the UK. They reviewed approximately 7,000 patients who underwent coronary artery bypass graft (CABG) surgery and valvular heart surgery over a 10-year period. Altogether, 38% of their patients were older than 70 years. They showed that older patients had a higher need for peri-operative interventions and requirements, thereby incurring extra resources and expenses.

Advancing age in the Western world has led to a significant increase in the number of elderly patients requiring cardiovascular care and cardiac surgery.[1] In deciding which patients need surgery, the benefits of both traditional and minimally invasive cardiac operations have to be balanced against the risks of these procedures, especially in the elderly population. The main risks of cardiac surgery affecting the elderly are transient ischaemic attack, stroke and cognitive decline, which can be as high as 13%, and renal failure, with 7% requiring renal replacement therapy.[2] Furthermore, mobilisation, rehabilitation and returning home after surgery are significant considerations when treating the elderly. It would be a failure of cardiac surgery if the patient could not be rehabilitated and be able to assume a good lifestyle following their operation.

Choice of surgery

The mainstay of cardiac surgery is CABG, which is performed for both symptomatic and prognostic reasons. In elderly asymptomatic patients, the prognostic value of the operation has to be thought through carefully and in the context of the patient's general health and lifestyle. The overall risk following CABG in patients older than 80 years is approximately 8%.[2]

Recently, there has been an increase in the number of elderly patients referred for cardiac surgery. One of the reasons is the emergence of minimally invasive techniques like transcatheter aortic valve implantation (TAVI) and off-pump CABG (beating heart). It was thought that beating heart surgery and avoidance of cardiopulmonary bypass would reduce the rate of postoperative neurological events. However, we and others have shown no difference in the rate of postoperative transient ischaemic attack, stroke or cognitive decline comparing on- and off-pump CABG.[3]

There has also been an increase in the number of referrals for patients with aortic valve disease since the introduction of TAVI. There is a perception among referring physicians that TAVI is associated with less morbidity and mortality compared with conventional surgical aortic valve replacement (AVR). In parallel, minimally invasive surgical AVR, that is, performing surgical AVR through a limited 6–8 cm incision in the sternum, has become established. Not all patients referred by general practitioners and cardiologists for TAVI will undergo this procedure. In centres where TAVI is performed, high-risk patients with aortic valve disease are discussed in a multi-disciplinary meeting consisting of a non-invasive cardiologist, invasive cardiologist, cardiac surgeons and anaesthetists, and often with a physician for care of the elderly present. Some patients will then undergo TAVI, some minimally invasive AVR or traditional AVR, and some medical therapy. Currently, the risk of early mortality following TAVI is 5–8%.[4] The risk of surgical AVR in patients older than 80 years is reported to be 5.5% in the National Adult Cardiac Surgical Database.[5] It can be argued that the higher-risk patients are referred for TAVI and thus the two populations receiving TAVI and AVR are not comparable. However, to date, the mortality figures reported from 'real-life' series are comparable.

Similarly, there has been an increase in the number of patients referred with mitral valve disease due to the development of MitraClip.[6] As for the work-up of patients for TAVI, high-risk patients referred for MitraClip are also discussed at a multi-disciplinary meeting and some will receive conventional surgery.

Chance detection

A number of patients are referred for cardiac surgery when, during the peri-operative assessment of their non-cardiac operation, a cardiovascular

problem is detected. This is often encountered in patients with no cardiovascular symptoms. It is important that the non-cardiac surgeon, anaesthetist and referring physicians understand the implications and recovery required following cardiac surgery to become 'fit' for the originally intended surgery, for example hip replacement. The risks of a peri-operative cardiac event during the non-cardiac procedure has to be balanced against the risks of cardiac surgery, especially in asymptomatic elderly patients where the cardiac operation is a bridging procedure to their non-cardiac surgery.[7] In addition, the time required for rehabilitation following cardiac surgery to get fit for the non-cardiac procedure can be significant.

Conclusion

With the development of percutaneous and minimally invasive techniques, there is an increasing number of elderly patients being referred for cardiac surgery. Surgery, even with its current good outcomes, has to be considered in conjunction with improved functional results leading to a better quality of life

Conflict of interest

None declared.

Editors' note

See also the article by Ngaage *et al*. on pages 28–32 of this issue.

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