Vegetations and embolic risk

Indications and optimal timing for surgery in infective endocarditis

Active phase of infective endocarditis (IE). Between 1991 and 1999 in France, the rate of cardiac surgery for infective endocarditis has increased from 31% to 35%. This may at least in part explain the concomitant decrease in hospital mortality. The indications for cardiac surgery must be performed when there has been an embolic episode and when large and mobile vegetations are present. Vegetative embolism can occur during the antibiotic treatment or after surgery and its optimal timing remains difficult decisions. Embolism occurs before the beginning of antibiotic treatment. The literature on this topic contrasts greatly. The embolism rate varies from 10–50% in different series. Three quarters of the embolisms, especially in spleen and kidneys.

Vegetations and embolic risk

Heart failure

The first indication for cardiac surgery in infective endocarditis is heart failure: it represents more than half of the indications. Heart failure is an ominous sign in infective endocarditis caused by some microorganisms. Perivalvar infection, such as abscesses and intracardiac fistulae, is most often the microorganism is a Staphylococcus species. Actinobacillus actinomycetemcomitans, Haemophilus species, Aggregatibacter actinomycetemcomitans, HACEK group (oral streptococci, organs from the HACEK group—oral streptococcal, enterococcal, haemolytic streptococcal, aerobic and anaerobic, Yersinia species, meningococcal, gonococcal, HACEK group—oral streptococcal, enterococcal, haemolytic streptococcal, aerobic and anaerobic, Yersinia species, meningococcal, gonococcal, Haemophilus, Actinomyces). Haemophilus species, Actinobacillus actinomycetemcomitans, HACEK group (oral streptococcal, enterococcal, haemolytic streptococcal, aerobic and anaerobic, Yersinia species, meningococcal, gonococcal, Haemophilus, Actinomyces)

In early prosthetic infective endocarditis (<12 months after valve replacement), most often the microorganism is a Staphylococcus species. Redo surgery is performed. The mortality rate of native valve prosthetic infective endocarditis is about 7% in the case of medical treatment and 25% in the case of medical + surgical treatment, and it may be higher in redo surgery. The mortality rate of prosthetic infective endocarditis is about 75% in the case of medical treatment and 30% in the case of medical + surgical surgery. Aredo surgery is often necessary, although it may be technically difficult. Rapid surgery is recommended in most cases since the rapidity of prosthetic infective endocarditis is 55–85% in the case of native valve.

The principal indications for cardiac surgery are heart failure, no control of infection, embolisms, large size of vegetations, severe valvar and perivalvar lesions, and infection caused by some microorganisms. Indications for cardiac surgery are heart failure, no control of infection, embolisms, large size of vegetations, severe valvar and perivalvar lesions, and infection caused by some microorganisms. Indications for cardiac surgery are heart failure, no control of infection, embolisms, large size of vegetations, severe valvar and perivalvar lesions, and infection caused by some microorganisms.
Cardiobacterium hominis, Eikenella corrodens, and Kingella kingae, if there are no signs of perivalvar infection.13

**Fungal infective endocarditis**

Infective endocarditis caused by Candida or Aspergillus are often complicated with very large vegetations, infectious metastases, perivalvar infection, and embolisms.14 Amphotericin B poorly penetrates into vegetations. Rapid surgery is thus most often needed.

**Difficult-to-treat microorganisms**

Surgery is almost always needed in infective endocarditis caused by certain Gram negative bacilli (for example, Pseudomonas aeruginosa, Achromobacter xylotoxitas), by Brucella, or by highly resistant enterococci.

**Neurological complications**

The rate of neurological complications varies from 15% to 45% in different series.1 4 They mostly are ischaemic cerebral vascular accidents, but also cerebral haemorrhages, ruptured mycotic aneurysms, meningitis, and encephalopathy.

A cerebral scan must always be performed in infective endocarditis, to look for silent cerebral vascular accidents. In the case of cerebral haemorrhage, an arteriography or an angio-magnetic resonance image must be performed, to look for a neurological cause for infection.

There is a risk of cerebral haemorrhage associated with cardiac surgery because of anticoagulation during and after the procedure. The risk of cerebral haemorrhage is not increased in the case of a stroke without haemorrhage, but it is greatly increased if the stroke is haemorrhagic. In this case, cardiac surgery should be delayed 2–3 weeks.15

If there is a ruptured mycotic aneurysm, it must be resected, clipped or embolised before cardiac surgery.15

**TIMING OF CARDIAC SURGERY**

Classically, early surgery was considered to be a greater risk than delayed surgery because of tissue inflammation and the surgery was technically more difficult. In fact, the duration of antibiotic treatment before surgery does not appear to influence the perioperative mortality, nor the rate of recurrent infective endocarditis.2 16 16

Surgery should be rapid in the case of haemodynamic deterioration, where there is no control of infection, or there are large and mobile vegetations. Decision as to the timing of surgery is particularly difficult when there is a neurological complication.

**CONCLUSION**

Table 1 presents a summary of the indications for surgery and its timing, as proposed recently by Olaison and Pettersson.1

Indications for surgery and its timing are difficult decisions to reach. The patient must be followed up closely (clinical examinations once or twice a day, regular scans, and transthoracic and transoesophageal echocardiography). There must be close collaboration between the physician, the cardiac surgeon, and the microbiologist.

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**REFERENCES**


Mitral and tricuspid valve thrombus in antiphospholipid syndrome

A 58 year old woman with a one year history of antiphospholipid syndrome and ineffective anticoagulant treatment (international normalised ratio 1.2) was admitted with pain in the left hypochondrium. Abdominal ultrasound revealed a 5 cm wide splenic infarction. Transoesophageal echocardiography showed mobile masses resembling bunches of grapes on both the mitral and the tricuspid valves (panels A and B, and video 1—to view video footage go to http://www.heartjnl.com/supplemental). On control transoesophageal echocardiography after six weeks of effective anticoagulation, these masses almost entirely disappeared from both valves (panel C and video 2). The patient showed no signs or symptoms of embolism during the same period.

Video footage appears on the Heart website—http://www.heartjnl.com/supplemental

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doi: 10.1136/hrt.2003.017434