

Early valve repair or replacement is not generally contra-indicated in patients with infective endocarditis and stroke with or without intracranial hemorrhage

In addition to antibiotic therapy, early surgical intervention is often required for an effective treatment of infective endocarditis to manage the sequelae of destruction of the valve itself and the paravalvular structures but the decision about whether and when surgery is necessary is complex. According to the most recent ESC guidelines on the management of infective endocarditis, surgical treatment using valve repair or replacement is not recommended within the first month in patients who suffered from an intracranial hemorrhage (1). The exact wording of the guidelines is the following:

- Valve surgery may be considered in IE patients with stroke or subclinical cerebral emboli and residual vegetation without delay if intracranial hemorrhage has been excluded by imaging studies and neurological damage is not severe (ie, coma) (Class IIb; Level of Evidence B).
- In patients with major ischemic stroke or intracranial hemorrhage, it is reasonable to delay valve surgery for at least 4 weeks (Class IIa; Level of Evidence B).

Nevertheless, waiting for four weeks or longer may not be always the best option because some of those patients may develop other valve-related complications, such as uncontrolled congestive heart failure or systemic infection. Therefore the discussion to proceed with earlier surgery has to outweigh the risk of the disease (progressive destruction of the valve and the adjacent structures, repetitive embolization) against the specific risks of cerebral damages due to the surgical treatment itself.

In the present Japanese multi-institutional study (with all the limitations of a retrospective study design), Okita and colleagues were able to demonstrate that patients who underwent valvular surgery within 7 days of the onset of intracerebral hemorrhage had a higher risk of hospital death and new perioperative cerebral complications. However, the risks of hospital death and new cerebral complications became lower as soon as surgery was performed more than one week after the cerebral event. Due to their finding, the authors propose that shortening the interval between diagnosis of cerebral hemorrhage and surgery (e.g. waiting for at least 3 weeks) may already allow to decrease the overall risks (2).

The authors analyzed 568 patients, out of them 118 with non-hemorrhagic cerebral infarction and 54 with intracranial hemorrhage. Clinical outcome was analyzed according to the timing of surgery after the diagnosis of the cerebral event was made. The overall mortality in the different groups ranged between 5.6% in the group of patients operated after a cerebral hemorrhage has happened, 7.6% in those patients who suffered from non-hemorrhagic cerebral infarction) and 9.1% in those without cerebral events. These results are remarkable and compared very favourably with those of different series reported in the literature – even with appropriate antibiotic therapy and surgical intervention – where inhospital mortality rates up to 20% were reported.

Of course, the authors were not able to determine the mechanisms of stroke in each individual patient, since there was no similar cerebral imaging protocol through all the involved institutions. However from other sources, it is known that the most common cause of stroke in patients with infective endocarditis in the modern antimicrobial era is a septic embolus resulting in ischemia, often followed by hemorrhagic transformation (3). In the setting of systemic embolization, another question is of paramount importance, namely, that of the management of anticoagulation. The latter may increase the risk of an embolic infarction to convert into a hemorrhagic one. On the other hand, stopping the anticoagulant therapy increase the chance of recurrent embolization or valve dysfunction in patients, especially in those patients suffering from prosthetic valve endocarditis.

In the most recent literature, it has been recognized that early surgery is associated with a reduction in the rate of embolic complications in patients who present with left-sided IE and vegetations larger than >10 mm.

Since Iung found significant discrepancies between guidelines and clinical practice in patients suffering from acute infective endocarditis (4) – in term of undertreatment – I fully accept the conclusions of Okita and co-authors who recommend that valve surgery may be performed in patients with stroke or subclinical cerebral emboli without delay if intracranial hemorrhage has been excluded by imaging studies and neurological damage is not severe (ie, coma) 2). In patients with major cerebral ischemia or hemorrhage, it is reasonable to delay valve surgery for at least 3 to 4 weeks.

References

1. Authors/Task Force Members, Habib G, Lancellotti P, Antunes MJ, Bongiorni MG, Casalta JP, Del Zotti F et al. 2015 ESC Guidelines for the management of infective endocarditis: The Task Force for the Management of Infective Endocarditis of the European Society of Cardiology (ESC) Endorsed by: European Association for Cardio-Thoracic Surgery (EACTS), the European Association of Nuclear Medicine (EANM). *Eur Heart J* 2015;36:3075-128.
2. Okita Y, Minakata K, Yasuno S, Uozumi R, Sato T, Ueshima K et al. Optimal timing of surgery for active infective endocarditis with cerebral complications: a Japanese multi-center study. *Eur J Cardiothorac Surg*, 2016; in press.
3. Nishimura RA, Otto CM, Bonow RO, Carabello BA, Erwin JP3rd, Guyton RA et al. AHA/ACC guideline for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *J Thorac Cardiovasc Surg* 2014;148:e1-e132.
4. Iung B, Doco-Lecompte T, Chocron S, Strady C, Delahaye F, Le Moing V, et al. AEPEI Study Group. Cardiac surgery during the acute phase of infective endocarditis: discrepancies between European Society of Cardiology guidelines and practices. *Eur Heart J*. 2015 Dec 18. pii: ehv650.

Thierry Carrel, MD
Departement of Cardiovascular Surgery
University Hospital and University of Bern
Bern, Switzerland
thierry.carrel@insel.ch