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EDITORIAL COMMENT

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ADULT CARDIAC

Early valve repair or replacement is not generally contraindicated in patients with infective endocarditis and stroke with or without intracranial haemorrhage

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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 on 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 haemorrhage [1]. The exact wording of the guidelines is the following:

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

Nevertheless, waiting for 4 weeks or longer may not always be 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 *et al.* were able to demonstrate that patients who underwent valvular surgery within 7 days of the onset of intracerebral haemorrhage 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 1 week after the cerebral event. Due to their finding, the authors propose that shortening the interval between the diagnosis of cerebral haemorrhage and surgery (e.g. waiting for at least 3 weeks) may already decrease the overall risks [2].

The authors analysed 568 patients, of whom 118 were with non-haemorrhagic cerebral infarction and 54 with intracranial haemorrhage. Clinical outcome was analysed according to the timing of surgery after the diagnosis of the cerebral event was made. The overall mortality was 5.6% in the group of patients operated after a cerebral haemorrhage has occurred, 7.6% in those patients who suffered from non-haemorrhagic 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 in-hospital 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 ischaemia, often followed by haemorrhagic 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 converting into a haemorrhagic one. On the other hand, stopping the anticoagulant therapy may increase the chance of recurrent embolization or valve dysfunction in patients, especially in those 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 *et al.* found significant discrepancies between guidelines and clinical practice in patients suffering from acute infective endocarditis [4]—in terms of under-treatment—I fully accept the conclusions of Okita *et al.* who recommend that valve surgery may be performed in patients with stroke or sub-clinical cerebral emboli

without delay if intracranial haemorrhage has been excluded by imaging studies and neurological damage is not severe (i.e. coma). In patients with major cerebral ischaemia or haemorrhage, it is reasonable to delay valve surgery for at least 3–4 weeks.

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