The Truth Perturbs in the Seemingly Negligible; Brain Magnetic Resonance Imaging and Endocarditis

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Here is the puzzle in a nut-shell: a patient with endocarditis is referred for surgery. If there is no hemorrhagic cerebral insult, prompt surgery is advised. If there are no neurologic symptoms, should the patient undergo a preoperative magnetic resonance imaging of the brain (MRI)?

MRI reveals coincidental cerebral variants such as microbleeds.[1] The clinical significance of these enigmatic lesions is uncertain during endocarditis; are they only harbingers of old age in some patients?[1] What are these lesions, if they are not associated with endocarditis or cerebral hemorrhage? Is surgery for endocarditis detrimental to some of the patients with cerebral microbleeds? Which patients, if any, should be directed for conservative treatment?

In the current article by Murai et al, 2 patient groups with endocarditis were compared in terms of positive vs negative cerebral microbleed lesions.[2] The authors tackled open-mindedly the challenging significance of these incidental lesions during endocarditis. The article set clear definitions for the lesions according to MRI; cerebral microbleeds were defined with a T2-star-weighted imaging or susceptibility-weighted imaging: a hypointense lesion less than 10 mm in diameter was found in 40 out of 74 patients (54%). The rest of the patients had neither cerebral microbleeds nor bigger cerebral hemorrhage. A clear surgical strategy was applied and encompassed surgery for heart failure refractory to medical therapy, persistent infection, repeat embolization, high embolic risk, and presence of perivalvular extension of endocarditis. Early surgery was defined as surgical intervention within 14 days after the initial diagnosis. Late surgery was indicated whether severe regurgitation after conventional treatment and the resolution of infection occurred.

According to multivariate Cox regression analysis adjusted for age and operative risk, the presence of cerebral microbleeds did not impact clinical outcome and all-cause death in patients with endocarditis. It is tempting to speculate that clinical assessment suffices to detect whether the patients are neurologically suitable for surgery, since only hemorrhage of a considerable size determines the fate of the patient; microbleeds are indicative of patient age, and age alone does often not matter in decision-making for surgery.

Are these conclusions too presumptive and optimistic? Indeed, the critical reader mirrors the results of this study to everyday clinical judgment, and the authors of the study remind that precautious interpretation is mandatory.

The patient groups were not comparable, and the patients with cerebral microbleeds were substantially older. There was a significantly higher percentage of staphylococcal endocarditis in the patients with cerebral microbleeds as compared with those without the lesions. Even if the patients had not preoperative neurologic symptoms, they may have had preoperative

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Central Message

Do incidental cerebral microbleeds found at magnetic resonance imaging impact clinical decision-making in patients with endocarditis?

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microbleeds that would had been only detected by MRI. In addition, brain MRI was performed without a timely protocol; among the 49 surgically treated patients, the majority underwent MRI before surgery, but within a very liberal time range; brain MRI was performed before, at or after the diagnosis of endocarditis.

On the other hand, why was MRI even offered to some of the patients; was there a high suspicion of a cerebral insult in these patients? Yet, 30 patients did not undergo MRI, which was almost 23% of the patients. In addition, 28 patients did not have the MRI protocol and were deleted from the study. Altogether, data were available for only 74 patients out of 132. Almost a half of the patients were then not studied. According to power calculation, the sample size of this study was clearly not sufficient to detect definite statistical differences between the 2 groups.

Patients with neurologic symptoms were referred to neurologists and assessed with standardized neurologic examinations, when these were thought necessary. For some patients, the neurologic outcome was interpreted only by the authors from medical records. What exactly were the neurologic symptoms, and were all events of strokes, transient ischemic attacks, or excessive clumsiness recorded systematically? The patients were followed up at the outpatient clinic every 4−8 weeks after discharge, but a total of 11 patients (15%) were lost. Gross neurologic evaluation does not compensate for the incomplete follow-up and lack of preoperative or postoperative MRI.

A single-center retrospective study of a small number of patients cannot rule out that cerebral microbleeds do not harm the patient after surgery. Importantly, Murai et al point out that further large-scale prospective studies are warranted to elucidate the clinical importance of the mysterious cerebral microbleeds in patients with endocarditis and the plausible association with antiplatelet and anticoagulant therapy. As cerebral microbleeds are undetected without a highly sophisticated MRI, the evaluation of the clinical significance of these lesions justifies a low threshold for brain screening in patients with endocarditis.

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