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SCIENTIFIC EDITORIAL

Cerebral microbleeds: A clinical issue for cardiologists?

Les microbleeds cérébraux : un problème clinique pour les cardiologues ?

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Some advances in technologies can help clinicians to better understand diseases and to modify their attitude towards management of their patients in terms of therapeutic strategies. Cerebral microbleeds (CMBs) are recently discovered lesions that have had a significant effect on neurologists' conceptions about cerebral vasculopathies, and about which many questions still need to be answered for clinical practice.

CMBs were first described in the 1990s, after the development of magnetic resonance imaging (MRI) sequences called gradient echo T2*. CMBs appear as small round hypointense lesions with a black appearance and a diameter of < 5—10 mm; they are typically located either in the deep brain (basal ganglia) or in the corticosubcortical regions (lobar CMBs). In some patients, the CMB topography is mixed (Fig. 1). To distinguish between a CMB

Abbreviations: CAA, Cerebral amyloid angiopathy; CI, Confidence interval; CMB, Cerebral microbleeds; ICH, Intracerebral haemorrhage; MRI, Magnetic resonance imaging; NOAC, Non-vitamin K antagonist oral anticoagulant.

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Antiocoagulants

and differential diagnoses, including calcification, iron deposition (especially when lesions are located in the basal ganglia), cavernoma and the end of veins, diagnostic criteria have been proposed by consensus [1]. Histopathological analyses of these radiological constructs indicated that they corresponded to focal perivascular haemosiderin deposits, suggestive of an underlying vasculopathy [2]. Since the initial description of CMBs, the literature on the subject has grown, and now describes the frequency of these lesions, their association with neurological diseases and their prognostic value.

The prevalence of CMBs was initially estimated at about 5% in the healthy population, with no difference between Asian and non-Asian people [3]. However, this prevalence may have been largely underestimated. Actually, the prevalence of CMBs differs greatly depending on the setting of the studied populations and the MRI variables used for their detection [1]. Hence, in the population-based Rotterdam scan study, 15.3% of the participants had at least one CMB, and the authors demonstrated that the prevalence doubled with each decade, from 6.5% in patients aged 45—50 years to 35.7% in those aged > 80 years [4]. In addition, with age, hypertension was shown to be strongly associated with both the prevalence of CMBs [3—5] and the occurrence of newly developed CMBs during follow-up [4]. Other vascular risk factors associated with CMBs include smoking and diabetes [3,4].

The prevalence of CMBs was also shown to be greater in patients with a history of cerebrovascular diseases. Hence, 34% of patients with ischaemic stroke and 60% of those with spontaneous intracerebral haemorrhage (ICH) had at least one CMB, according to a large review of the literature [3]. Furthermore, CMBs were more frequent among people with recurrent stroke than in those with first-ever strokes, both for ischaemic stroke (45% vs 23%) and ICH (83% vs 52%) [3]. Several studies also pointed out a greater association between CMBs and lacunar infarcts than other ischaemic stroke subtypes; CMBs were identified in 53% of patients with lacunar strokes, in 36% of those with atherothrombotic stroke and in 19% of those with cardioembolic strokes [3]. Moreover, lacunar strokes were associated with an increased risk of developing new CMBs over time [4]. Patients with cerebral white matter hyperintensities, defining leukoaraiosis, also had a greater risk of CMBs and of developing new CMBs during follow-up [4,6]. Finally, several studies have provided evidence that CMBs are associated with cognitive impairment, dementia and Alzheimer's disease [7—10].

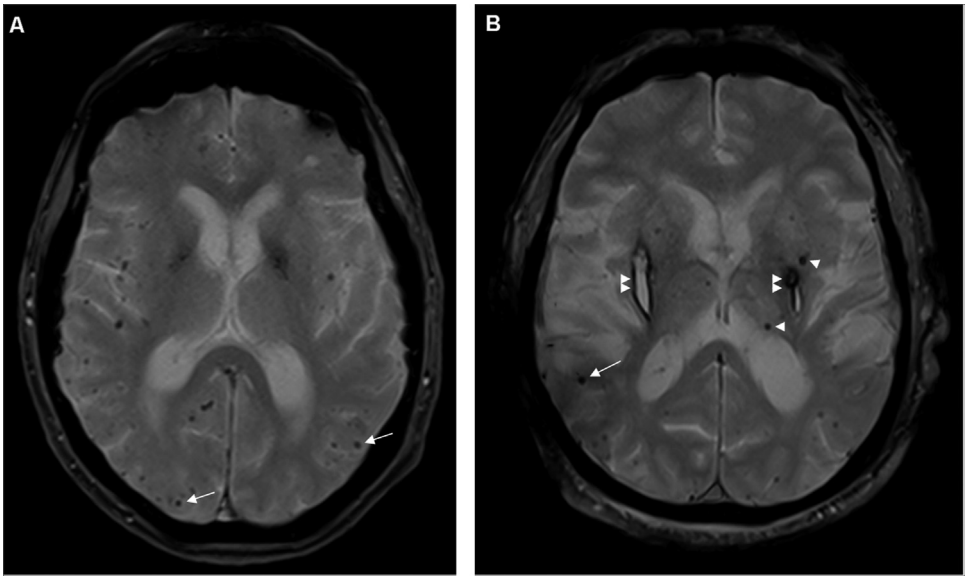

Figure 1. Axial T2* gradient echo-weighted brain magnetic resonance imaging of two patients, showing: (A) multiple bilateral lobar cerebral microbleeds (some are shown with arrows); and (B) both lobar (arrows) and deep (arrow heads) cerebral microbleeds associated with bilateral basal haemorrhages (double arrow heads), suggestive of small-vessel disease.