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Neuropsychological assessment and cerebral vascular disease: The new standards

Évaluation neuropsychologique et pathologie vasculaire cérébrale : les nouveaux standards

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ABSTRACT

Vascular cognitive impairment (VCI) includes vascular dementia (VaD), vascular mild cognitive impairment (VaMCI) and mixed dementia. In clinical practice, VCI concerns patients referred for clinical stroke or cognitive complaint. To improve the characterization of VCI and to refine its diagnostic criteria, an international group has elaborated a new standardized evaluation battery of clinical, cognitive, behavioral and neuroradiological data which now constitutes the reference battery. The adaption of the battery for French-speaking subjects is reported as well as preliminary results of the on-going validation study of the GRECOG-VASC group [Clinical Trial NCT01339195]. The diagnostic accuracy of various screening tests is reviewed and showed an overall sub-optimal sensitivity (< 0.8). Thus, the general recommendation is to perform systematically a comprehensive assessment in stroke patients at risk of VCI. Furthermore,the use of a structured interview has been shown to increase the detection of dementia. In addition to the well known NINDS-AIREN criteria of VaD, criteria of VCI have been recently proposed which are based on the demonstration of a cognitive disorder by neuropsychological testing and either history of clinical stroke or presence of vascular lesion by neuroimaging suggestive of a link between cognitive impairment and vascular disease. A memory deficit is no longer required for the

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diagnosis of VaD as it is based on the cognitive decline concerning two or more domains that affect activities of daily living. Both VaMCI and VaD are classified as probable or possible. These new criteria have yet to be validated. Considerable uncertainties remain regarding the determinant of VCI, and especially the lesion amount inducing VCI and VaD. The interaction between lesion amount and its location is currently re-examined using recent techniques for the analysis of MRI data. The high frequency of associated Alzheimer pathology is now assessable in vivo using amyloid imaging. The first studies showed that about a third of patients with VaD due to small vessel disease or with poststroke dementia have amyloid PET imaging suggestive of AD. These new techniques will examine the interaction between vascular lesions and promotion of amyloid deposition. Although results of these on-going studies will be available in few years, these data indicate that efforts should be done in clinical practice to reduce underdiagnosis of VCI; VCI should be examined using a specific protocol which will be fully normalized soon for French-speaking patients; the sub-optimal sensitivity of screening tests prompts to use a structured interview to grade Rankin scale and to perform systematically a comprehensive assessment in stroke patients at risk of VCI; poststroke dementia occurring after 3 months poststroke may be preventable by treatment of modifiable vascular risk factors and secondary prevention of stroke recurrence according to recent recommendations.

RÉSUMÉ

Les troubles cognitifs vasculaires (TCV) incluent la démence vasculaire, le trouble cognitif léger vasculaire et la démence mixte. Afin d'améliorer la caractérisation des TCV et de leurs critères diagnostiques, un groupe international a élaboré une nouvelle batterie standardisée pour l'évaluation clinique, neuropsychologique et neuroradiologique qui constitue maintenant la batterie de référence. L'adaptation française de cette batterie est rapportée ainsi que les résultats préliminaires de l'étude de validation GRECOG-VASC [Clinical Trial NCT01339195]. La précision diagnostique des divers tests de repérage est exposée ainsi que leur sensibilité qui reste infra-optimale. Ce travail expose également les récents critères de TCV qui sont en cours de validation. Des incertitudes demeurent concernant les déterminants des TCV, en particulier la charge lésionnelle requise pour induire un déficit cognitif et une démence vasculaire. Cette question est actuellement réexaminée par les nouvelles techniques d'analyses d'IRM et par l'imagerie amyloïde qui permet de diagnostiquer in vivo la présence d'une pathologie amyloïde qui est fréquemment associée. Dans l'attente des résultats des études internationales, les données actuelles indiquent déjà que des efforts doivent être mobilisés en pratique clinique pour réduire le sous-diagnostic des TCV ; les TCV doivent dès à présent être examinés selon un protocole spécifique dont les tests neuropsychologiques seront prochainement complètement normalisés pour la population francophone ; la sensibilité infra-optimale des tests de repérage incite à utiliser un questionnaire structuré pour grader l'échelle de Rankin et à utiliser systématiquement une batterie neuropsychologique chez les patients à risque de TCV ; la démence survenant après trois mois d'un AVC est le plus souvent en rapport avec des lésions vasculaires et peut donc potentiellement être prévenue par le traitement des facteurs de risque vasculaire modifiables et par la prévention secondaire de l'AVC. D'une manière générale, le TCV constitue une cause de déficit cognitif qui peut être prévenue et des recommandations récentes ont été proposées en ce sens.

Vascular cognitive impairment (VCI) refers to a heterogeneous group of conditions in which vascular lesions cause or contribute to cognitive impairment. VCI encompasses all degrees of severity, from mild cognitive impairment to dementia. It includes the Vascular Dementia (VaD), vascular mild cognitive impairment (VaMCI) and mixed dementia (Bowler and Hachinski, 1995; Gorelick et al., 2011). In clinical practice, we are confronted to VCI in two main situations: the assessment of a stroke patient ('poststroke situation') and the etiological work-up of cognitive complaint ('memory clinic situation') revealing vascular lesion in a patient with an apparently 'silent' stroke.

In stroke patients, persistent cognitive impairment affects about half of survivors and is severe enough to be qualified as dementia in about half of the latter (i.e., 25% of stroke survivors) (Tatemichi et al., 1992; Madureira et al., 2001; Pohjasvaara et al., 2002; Sachdev et al., 2004; Rasquin et al., 2004). This frequency has been especially examined in infarct and the few studies assessing cerebral hemorrhage have shown similar frequency (Garcia et al., 2013). Conversely,