■ Letter to the editor

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Epileptic Disorders

Epilepsy and clinically latent cerebrovascular disease

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To the Editor,

Cvetkovska *et al*. detailed some associations between co-morbidities and new-onset epilepsy among adults [1]. Among systemic vascular conditions, hypertension was a common finding for these patients. Such a study must be juxtaposed with the proposition of hypertension as a predictor for epilepsy based on The Framingham Heart Study data which also provides indirect but yet ongoing support for the concept of progressive latent and subclinical hypertensive cerebral microvascular disease [2]. Unfortunately, the historic viewpoint of The Framingham Heart Study was limited by the dissociation of hypertension, as a defined and categorized clinical measure, from hypertension as a chronic disease.

As conceded by Stefanidou and colleagues in their contemporary analysis of the Heart Study, hypertension was defined by either pointed systolic or diastolic blood pressure measurements or by the actual use of an anti-hypertensive pharmaceutical [2]. As such, the choice of such arbitrary but focused measures, regardless of ascribing to the Seventh Report of the Joint National Committee of 2004, creates limitations for understanding how hypertension in its spectral distribution, as a measure and as a progressive systemic and chronic illness, contributes to the eventuality of epilepsy whether as a primary cause or co-factor [3]. It is generally conceded that hypertension is best viewed in stages of a disease evolution [4]. Some markers, such as direct blood pressure readings, may fluctuate back and forth across these stages, but other aspects of hypertension as a chronic disease are cumulative and unlikely to return to a norm. For example, microvascular disease attracts the lesser likelihood of significant reversibility, albeit its progression may be stalled or mitigated. Accordingly, the duration of hypertension is a potentially major factor for analysis among the vascular risks for epilepsy. Likewise, stratification for hypertension in its stages would also be of interest to determine whether increased severity associates with epilepsy. As such, it is conceivable that the definitions from the Seventh Report may have been especially limiting in these regards.

That chronic hypertension is a cerebrovascular disease is no longer hypothetical [5, 6]. What has been largely confusing in understanding this concept are the working definitions of chronic hypertension and cerebrovascular disease [7]. As a collection of physiological, metabolic, and vascular abnormalities, there is often genetic predisposition, but one of the most salient features of this syndrome is the hallmark of endothelial dysfunction [8, 9].

Chronic hypertension is associated with arteriolar constriction and deterioration of smooth muscle. The diseased vascular wall develops microatheromata through the stepwise progression of lipohyalinosis and fibrinoid necrosis, and degenerative changes may be followed by perturbation of the affected vessels and a consequent localized edema of the brain substance [10]. Although microaneurysmal pathology can be seen, it is arteriolar occlusion, rather than rupture, which then more often leads to parenchymal brain changes. Ischemia-related alterations of the periventricular white

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matter also become apparent with or without amyloid deposition. Both in early and late disease, there is an accrual of pathological changes. It is not surprising that the World Health Organization classification of cerebrovascular diseases had historically recognized the same nearly one-half century ago [11].

What can be anticipated therefore is that chronic hypertension as a cerebrovascular disease amounts risk for focal deficits, catastrophic events, progressive cognitive impairment, overt dementia, vision loss, and now epilepsy in the least. It is ever more imperative that treatment and prevention be considered in very early phases [12, 13]. What remains problematic, however, is the global definition of markers that lead physicians to initiate preventative strategies in addition to purely monitoring blood pressure assessments. In this context, it would be of value to determine whether the data from Cvetkovska *et al*. also supports the independent association of hypertension and epilepsy in multivariate analyses. ■

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