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Letter to the Editor

Methodological insight for assessment of haemodynamic perfusion in neural retina and optic nerve

Indicazioni metodologiche per la valutazione della perfusione emodinamica della retina neurale e del nervo ottico

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PAROLE CHIAVE: *BPPV, emodinamica retinica, OCTA*

Dear Editor,

We read with great interest the article by Neri and co-workers focusing on the evaluation of vascular factors in patients with recurrent benign paroxysmal positional vertigo (BPPV) [1]. By study design, the vascular factor was specifically assessed using both extracranial colour-coded duplex sonography of vertebral arteries (ECCSVA) to examine vertebral flow, and retinal fluorangiography (FAG) to indirectly study the cerebral microcirculation. In the above-described diagnostic methodological context, the authors affirm that "The FAG excluded qualitative alterations of the cerebral microcirculation" [1], but this conclusive statement appears to be supported only by an outdated speculative presupposition of FAG-based correlation between retinal and cerebral haemodynamics [2], which has lost its investigative value soon after the introduction of diagnostic tools specifically aimed at the measurement of retinal microvascular blood flow, such as scanning laser Doppler flowmetry [3] and, above all, optical coherence tomography angiography (OCTA) [4,5]. During the last years, OCTA has been repeatedly applied for quantitative assessment of retinal haemodynamics, detailing that microvascular changes in the retina can reflect small vessel cerebral changes in patients with Alzheimer's disease or cognitive decline [4,6-9]. In this current scenario, OCTA definitely represents the first-choice method to verify the contribution of vascular factors in a clinical manifestation such as BPPV, and its unexpected non-utilisation is probably as result of a lack of updated scientific literature search in absence of an ophthalmologist within the authors' research group. In fact, during the indirect evaluation of cerebral microcirculation, OCTA allows very higher levels of specificity and sensitivity compared with FAG, also avoiding the risks related to the intravenous injection of fluorescein, the vital colourant used to carry out FAG. In view of that, among BPPV patients reported by Neri and co-workers it is not possible to exclude alterations of cerebral microcirculation which could be indirectly highlighted by a safe and modern methodological approach using several important OCTA-based outcome measures, such as peripapillary and parafoveal perfusion densities of

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both retinal vascular networks, choriocapillaris and choroid. Moreover, the paper does not include a complete audiological evaluation of patients: history of hearing loss and tinnitus should be investigated for a more complete assessment of the patients examined. Episodes of sudden or rapidly progressive hearing loss may be suggestive of vertebrobasilar insufficiency and many audiological disorders such as presbycusis, noise-induced hearing loss and tinnitus are suspected of being related to alterations in blood flow [10]. Detecting these symptoms could corroborate the hypothesis proposed by Neri at al. that ischaemic events contribute to aetiopathogenesis of BPPV. To this end, we suggest that pure tone audiometry results, THI (Tinnitus Handicap Inventory) and relevant episodes of audiological history should be collected and included in the data analysis.

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