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Sir,
Electroretinography can provide objective assessment of inner retinal function prior to atrophic change on OCT

The paper by Yusuf *et al*¹ describing cases of transient artery occlusion following phacoemulsification surgery provides an important addition to the differential for visual loss following cataract extraction, and in their subsequent letter² they suggest prospective case finding to establish what risk factors might be associated with this phenomenon. They state that OCT 'may provide the only objective evidence of TRAO, particularly in patients not presenting in the immediate post-operative period'. Unless patients are seen acutely when the characteristic inner retinal thickening may be evident, OCT changes may be quite subtle until inner retinal atrophy develops some time later. A modality that may be helpful in this intermediate period is electroretinography, which provides objective assessment of function, with some localisation of dysfunction. The full-field flash electroretinogram (ERG) can discern inner retinal dysfunction (by selective impairment of the b-wave in comparison with a relatively preserved a-wave, giving an electronegative ERG,³ and also, more recently described, by reduction of the photopic negative response⁴). Electrodiagnostic testing is not as readily available as OCT, so this may not be always feasible. The development of handheld devices may allow more widespread use,⁵ although recordings using these devices may need greater validation. Also, more localised arteriolar insufficiency may not be detected so sensitively by full-field techniques, in which case multifocal electroretinography can be helpful. This highlights the likely added value of using objective tests of retinal function in conjunction with high-resolution imaging of retinal structure; the latter is not always abnormal when function can be markedly impaired.

Conflict of interest

The author declares no conflict of interest.

References

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Sir,
Transient retinal artery occlusion: the potential utility and limitations of electroretinography

We agree with Mahroo's¹ helpful suggestions on the utility of electroretinography (ERG) in suspected transient retinal artery occlusion (TRAO) cases.

TRAO is a recently proposed clinical entity supported by OCT findings.^{2,3} The ERG features of TRAO are yet to be described, and may be sought as part of a prospective case-finding study. Two limitations of Ganzfeld ERG in TRAO are: (1) branch pattern TRAO may not be detected; and (2) b-wave attenuation on ERG reverses fully after 30 min in experimental models of transient retinal ischaemia.⁴ ERG evidence of widespread ischaemia may vanish before testing takes place.

However, if there is perimetric or OCT evidence of ongoing retinal ischaemia when ERG is performed, it is likely that ERG abnormalities would be detectable. If the ischaemic changes extend beyond the obviously affected area of the retina, the Ganzfeld ERG might provide evidence of retinal ischaemia in the form of b-wave amplitude reduction and increased 30-Hz photopic flicker implicit time.

The multifocal ERG (mfERG) may provide evidence of localised ischaemic changes and might have contributed to the diagnosis in cases 2 and 3.² Branch retinal artery occlusion attenuates the N1, P1, and N2 components in the distribution of ischaemic retina on mfERG.⁵ mfERG is capable of identifying wider retinal dysfunction than that suggested clinically.⁶ It has been used to demonstrate functional recovery following retinal artery occlusion⁷ and to detect subclinical retinal dysfunction in Susac's syndrome.⁸ Pattern ERG may also demonstrate reduced amplitude or delayed P50 in cases