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DOES UHTHOFF'S SYMPTOM ALWAYS MEAN M.S.?

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Abstract

Transient visual blurring caused by raised body temperature, often related to exercise and hot baths, has become known as Uhthoff's symptom. This symptom has classically been regarded as heralding multiple sclerosis. This paper describes firstly a classical case of Uhthoff's as the presenting symptom in multiple sclerosis, secondly in pituitary adenoma and thirdly in ischaemic optic neuropathy.

In all three diagnoses the vascular—steal theory offers the most acceptable explanation as to the mechanism of this visual disturbance.

Uhthoff's often means multiple sclerosis. This paper however stresses the importance of a careful investigation that does not ignore the possibility of compressive lesions or other neurological problems in patients who present with Uhthoff's symptom.

Key words: *pituitary adenoma, ischaemic optic neuropathy, Leber's optic atrophy, multiple sclerosis.*

INTRODUCTION

Episodes of transient visual blurring caused by raised body temperature have become known as Uhthoff's symptom, or Uhthoff's sign or syndrome. Raised body temperature may occur following exercise, hot baths or even infections.

Traditionally this symptom has been linked with the diagnosis of multiple sclerosis but following the presentation of four patients with this symptom and other pathology, a literature search was made. It revealed that while most authors describe this symptom as occurring in association with retrobulbar neuritis, due to demyelination, other possible aetiological factors have also been described.

HISTORY

Uhthoff[1] first noted this symptom in 1889 in four patients, following exercise, with retrobulbar neuritis and other signs of multiple sclerosis.

Other authors confirmed these findings and in 1947 Franklin and Brickner[2] reported transient visual blurring not only after exercise but also after hot food, hot showers and even a hot hair drier. Further studies continued to confirm the association of this transient visual blurring and the optic neuritis of M.S.[3-6,9] Trials and reports have resulted in the clinician equating Uhthoff's sign with multiple sclerosis but the occasional paper has appeared which described Uhthoff's sign in patients with other conditions. In 1958 Nelson *et al.*[7] noted its occurrence in patients in whom hyperthermia was induced (Friedriech's ataxia, pituitary tumour and posterior cerebral insufficiency) but they did not report its occurrence spontaneously in these cases. Smith *et al.*[8] reconfirmed this symptom occurring in acute Leber's optic neuropathy and noted further that this had been described by Morris in 1884.

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PATHOGENESIS

The exact cause of this visual disturbance is unknown. Nelson *et al.*,[7] who induced hyperthermia in a group of neurological patients thereby producing visual disturbances, felt there was a definite relationship between increased body temperature and the disturbance.

In the past it was suggested this change could be related to retinal vasospasm.[2] Other authors postulated alteration in the ionic disturbance in cell membranes or refractive causes.[4]

Guthrie[9] in 1951 suggested that peripheral vasodilation, associated with change in skin temperature, led to vascular changes in the central nervous system. Earl[10] (1964) postulated that these induced circulatory changes, while insufficient to affect normal neural tissue, could possibly be sufficient to affect the blood supply to areas of demyelination, resulting in reduced function.

Of all the theories advanced concerning Uhthoff's symptom this theory of vascular-steal appears to be the most favoured. It would be a suitable explanation not only for patients with multiple sclerosis but also for those with diagnoses as described in this paper.

Case Presentations:

With that background three patients are described who have been seen with Uhthoff's symptom as their presenting symptom. Each of these patients has a different diagnosis.

1. Uhthoff's symptom and multiple sclerosis.

J.B.—a physician aged 31.

History 1979. Disturbed (L) central vision following squash; pain on abduction of L. eye.

Examination—V.A.—R. 6/5; L. 6/5; pupils normal; fundi: N.A.D.; field (L) temporal desaturation to red and green; marked left optic nerve conduction defect; C.T. scan—normal.

Subsequent history. Uhthoff's and visual disturbance settled; 1981 lower limb weakness; 1983 dysaesthesia in hands; 1984 R. retrobulbar neuritis.

2. Uhthoff's symptom and pituitary tumour

G.P. aged 29. For 18 months blurred vision; diagnosed as retrobulbar neuritis; 4 weeks pregnant; vision deteriorated with exercise or hot shower resulting in a dense central scotoma; one episode of reduced vision for 2 months; possible episode of leg weakness; family history—brother suffers M.S.

Examination—V.A. R. 6/9 pt., L. 6/9 pt.; pupils N.A.D. fundi N.A.D.; fields equivocal; V.E.P.—grossly abnormal waveforms R. and L. were recorded. No recognisable responses for the checkerboard stimuli, confirming bilateral optic abnormality: fields repeated—bitemporal loss to red targets: C.T. scan—pituitary adenoma; surgery performed.

Subsequent history. V.A. R. and L. 6/5; normal pregnancy; marked improvement (note Fig. 1); no further Uhthoff's; V.E.P.—improved waveform but still delayed.

3. Uhthoff's symptom and ischaemic optic neuropathy

H.T. aged 77.

History—blurred vision after hot baths for one to three hours; also after painting. Previous history—bilateral aphakia (15 years); left retinal detachment with massive vitreous retraction; right contact lens.

Examination—R. 6/5 with correction; fundi N.A.D.; field N.A.D.; E.S.R. N.A.D.; V.E.P.—delayed responses.

Presumptive diagnosis—ischaemic optic neuropathy.

Subsequent history—aspirin b.d.; resolution of symptoms; no further Uhthoff's.

DISCUSSION

In this paper three patients' histories were detailed to demonstrate that Uhthoff's symptom may herald the diagnosis not only of multiple sclerosis and as previously described Leber's optic atrophy but also of compressive lesions of the optic nerve (pituitary adenoma) and ischaemic optic neuropathy.

The warning of Earl,[10] that this symptom deserves wider recognition to avoid the diagnosis of psychogenic disturbance in these patients, is

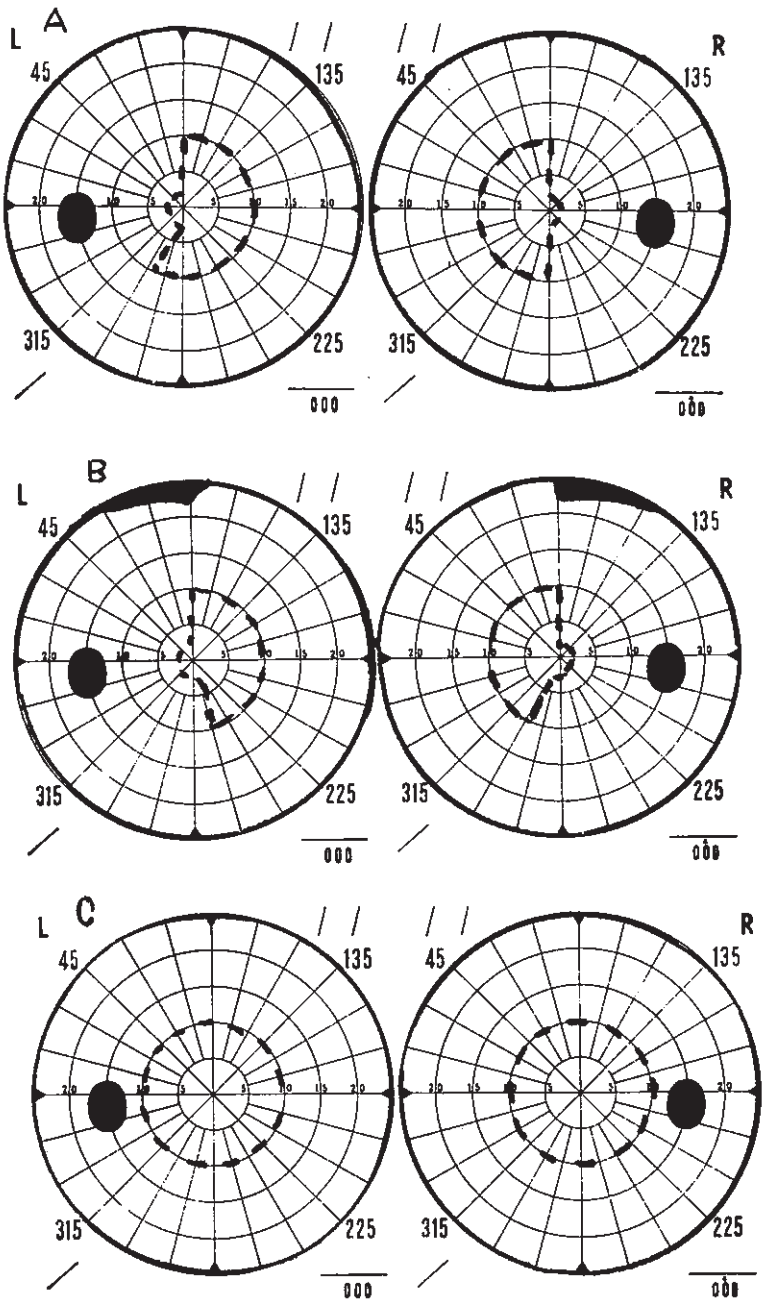

Figure 1:
Key: ———— = 10 mm white target tested at 2 m.
— — — — = 20 mm red target tested at 2 m.

A. Bitemporal field loss to red. (Patient G.P.)
B. Progression of this loss pre-operatively.
C. Normal fields post-operatively.

still valid. But this warning should be expanded so that the clinician is aware that it is not a specific indication of multiple sclerosis and that Uhthoff's symptom may indeed be indicative of other neurological disorders.

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