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**Case Reports** 

# A 66-year-old man with multiple cerebral and cerebellar infarcts due to idiopathic hypereosinophilic syndrome

ABSTRACT

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#### 1. Introduction

Hypereosinophilic syndrome (HES) is a rare disorder characterised by marked idiopathic eosinophilia with organ damage. We report a patient with HES complicated by multiple strokes and present the functional outcomes.

#### 2. Case report

A 66-year-old man with a past history of fibrinous pericarditis was admitted to hospital with a 3 month history of shortness of breath. On admission, he was found to have a pleural effusion that was subsequently drained via thoracotomy. Examination of the pleura revealed monocytes and eosinophils. Postoperatively he developed right upper limb and facial weakness and temporary cortical blindness. He was also noted to have splinter haemorrhages in his fingernails, cognitive impairment and a right extensor plantar response.

Brain MRI revealed multiple ischaemic lesions bilaterally in the fronto-parietal and occipital cortices, cerebellar hemispheres and thalami, consistent with a shower of recent embolic infarcts. A CT angiogram showed no evidence of vasculitis, and a lumbar puncture was normal with no oligoclonal bands. His echocardiogram was normal with no endocarditis or cardiac thrombus evident.

Blood tests demonstrated a significant eosinophilia of  $5.1 \times 10^9$ / L (normal,  $\leq 0.5$ ). C-reactive protein was elevated to 179 mg/L. Serum immunoglobulin E was markedly raised to 204 kU/L (normal, <87). The differential diagnosis at this stage was parasitic infection (in the setting of recent travel) or HES. There was neither serological evidence of infection (for example, Strongyloides) nor clonal markers of myeloid or lymphoid neoplasm, and HES was diagnosed.

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A 66-year-old male, who was previously functionally independent, presented with cerebellar ataxia and

cognitive impairment following hypereosinophilic syndrome (HES) complicated by multiple strokes. This

patient highlights the importance of prompt diagnosis and treatment, and of referring patients with mul-

tiple HES-related strokes for multidisciplinary neurological rehabilitation.

Corticosteroids were commenced at a high dosage, leading to resolution of the eosinophilia. The patient was also commenced on anticoagulants.

One month after admission, he was transferred to a multi-disciplinary neuro-rehabilitation ward. At this stage, he required assistance with transfers and ambulation due to reduced core stability, limb weakness and spasticity. Self-care tasks were compromised by fatigue and impaired strength and co-ordination in the right upper limb. Neuropsychological testing confirmed impaired attention, concentration and self-monitoring, slowed information processing, and impaired organisational and visuospatial skills.

By discharge 1 month later, the patient was independent in transfers and mobility, with residual high-level cognitive deficits, mild upper limb weakness and dyspraxia, right calf spasticity, right homonymous hemianopia and diplopia. He underwent right calf botulinum toxin injections, and was referred to outpatient rehabilitation.

By discharge from rehabilitation, the patient was independent in all daily activities, including driving. He attended a local gym and a physiotherapy-supervised running group. Repeat assessment revealed persistent impairment in speed of information processing, attention span and working memory capacity. However, visuospatial and constructional skills had improved.

### 3. Discussion

Eosinophilia, defined as an absolute blood eosinophil count<sup>1</sup> greater than  $0.5 \times 10^9/L$ , is usually classified as secondary (for example, to infections, drugs or connective tissue diseases), or primary, which can be further classified as clonal (associated with leukaemias or myeloid disorders) or idiopathic.<sup>2</sup>







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Idiopathic hypereosinophilia is diagnosed once secondary and clonal forms are excluded by appropriate studies.<sup>3</sup> The designation of HES (a subset of idiopathic hypereosinophilia) indicates that eosinophilia has been present for at least 6 months and that target organ damage has occurred.<sup>4</sup>

HES is rare with an unknown prevalence, and primarily affects males.<sup>2</sup> Patients can present with non-specific symptoms such as cough, fatigue, fever and weight loss.<sup>5</sup> All organ systems are susceptible to the effects of sustained eosinophilia, with dermatologic and pulmonary complications being the most common and mortality usually associated with cardiac manifestations.<sup>6</sup>

Neurological complications of HES include cerebral infarction, encephalopathy, and peripheral neuropathy.<sup>7</sup> Cerebral infarction is believed to be due to thromboembolism secondary to intramural cardiac thrombus that forms on areas of damaged myocardium.<sup>8</sup> Accordingly, authors have emphasised the importance of complete cardiac investigations in HES.<sup>9</sup> However, others have posited that brain infarction may result from the direct cytotoxic effect of the proteins released by circulating eosinophils and subsequent endothelial damage.<sup>10</sup> This may explain the multiple cerebral infarcts in the absence of cardiac thrombus in our patient. Nevertheless, the ability of HES to produce a clinical picture closely resembling cardio-embolic disease should be borne in mind for patients presenting with multiple localised cerebral infarcts.

High-dose corticosteroid therapy is the first-line treatment in symptomatic HES.<sup>3,6</sup> Longer-term treatment with steroid-sparing medications such as interferon- $\alpha$  are frequently required to treat or prevent relapses.<sup>3</sup>

There is some disagreement in the medical literature regarding the use of anti coagulants, as embolic events have been reported in HES despite adequate anticoagulation.<sup>11</sup> However, others cite its importance in slowing thrombus growth.<sup>7</sup>

The prognosis of HES is variable and there is no cure. The aim of treatment is to limit organ damage by reducing blood eosinophil levels.<sup>10</sup> Despite this, HES remains a potentially fatal disease with less than a 50% reported 10 year survival rate.<sup>3</sup>

This patient illustrates some of the serious complications of HES, such as multiple cerebral infarcts, and the necessity of its diagnosis and prompt management. In particular, HES should be considered in the differential diagnosis of cardio-embolic disease, given its ability to mimic the latter. It also underlines the importance of referring patients with multiple HES-related strokes for multidisciplinary neurological rehabilitation to assist in their recovery from a combination of motor, sensory, co-ordination, cognitive and speech deficits. An excellent functional outcome from a potentially fatal disease is possible with appropriate and timely medical and rehabilitation management.

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## Pendular nystagmus in hypomyelinating leukodystrophy



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#### ABSTRACT

We report the case of a 49-year old woman affected by hypomyelinating leukodystrophy. She presented with typical pendular nystagmus that was analyzed with video-oculography which is provided in the supplementary material of the report. The pendular nystagmus was accompanied by upper limb ataxia on the index-to-nose test. The video was partly recorded with a slow-motion technique in order to better demonstrate the ataxia and the pendular nystagmus. The brain MRI demonstrated a characteristic pattern of hypomyelination. Pendular nystagmus is a key clinical sign that contributes to the diagnosis of CNS hypomyelination when a leukodystrophic pattern is observed on brain MRI. © 2013 Elsevier Ltd. All rights reserved.

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