Polymyalgia rheumatica and giant cell arteritis

An ophthalmic emergency

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BACKGROUND
The occurrence of giant cell arteritis (GCA) in the setting of polymyalgia rheumatica (PMR) is not uncommon. It is imperative to recognise the symptoms and signs of GCA in this setting as the treatment of PMR with low dose corticosteroids will not protect the patient against the blinding consequences of GCA.

OBJECTIVE
This article reports the case of a woman with PMR who developed sudden and irreversible vision loss due to GCA.

DISCUSSION
It is important to recognise GCA in patients with PMR before the onset of permanent visual disability. A rising erythrocyte sedimentation rate in such patients may herald the onset of GCA. Other risk factors for GCA include age over 50 years, female gender, symptoms of ischaemia, and temporal artery abnormalities on examination. The latter two features warrant urgent ophthalmic or rheumatological review.

Case history

Mrs NB, 78 years of age, presented to her general practitioner with the acute onset of right sided visual loss. She described 6 weeks of difficulty swallowing, which was later associated with jaw claudication, and shooting pains behind her right eye. On the day of presentation she experienced a horizontal band of central vision loss that progressed rapidly to what she described as 'total loss of vision' in her right eye.

These symptoms occurred on a 3 year history of polymyalgia rheumatica (PMR). Her initial symptoms of malaise, myalgia, weight loss and weakness had responded promptly to treatment and were well controlled with oral prednisolone on a dose that had been tapered to 2.5 mg per day.

Mrs NB had no past history of ophthalmic problems (including refractive error) and her only other health problem was longstanding osteoporosis. For this she was taking calcium supplements and a bisphosphonate, with regular bone densitometry scans. She had no family history of acute angle closure glaucoma, multiple sclerosis, giant cell arteritis (GCA) or systemic lupus erythematosus. She also lacked any history of hypertension or other risk factors for arterial disease. She hadn't suffered any recent illnesses and had no history of infection with HIV, syphilis or tuberculosis.

Mrs NB was referred for urgent ophthalmic review. Her visual acuity was measured to be 'count fingers' in her right eye and 6/9 in her left eye. The right eye had a relative afferent pupillary defect, and her visual fields to confrontation demonstrated global field loss. The right temporal artery was tender and had reduced pulsatility compared to the left side. Examination of the anterior segment of the eye was otherwise normal for both eyes. Fundoscopy revealed a pale and swollen optic nerve head in the right eye (*Figure 1*). The left fundus was normal.

Investigations into previous erythrocyte sedimentation rate (ESR) readings demonstrated that they had been rising over the past 3 months (*Figure 2*). It had become elevated at 91 mm/hr (normal <15 mm/hr) 2 months before presentation. The C-reactive protein (CRP) level that was taken 1 month before presentation was also

elevated at 100 mg/L (normal <10 mg/L). These results and the clinical findings led to the provisional diagnosis of GCA. Further blood tests and a temporal artery biopsy were arranged. Blood tests that day revealed the ESR to be 103 mm/hr with the CRP level 41 mg/L. The platelets were elevated at 421x10^9 (150–400) and there was a normocytic anaemia (Hb 108g/L, MCV 87.7fl).

Figure 1. Appearance of the right optic disc demonstrating the elevation, blurred margins and arterial attenuation consistent with an anterior ischaemic optic neuropathy

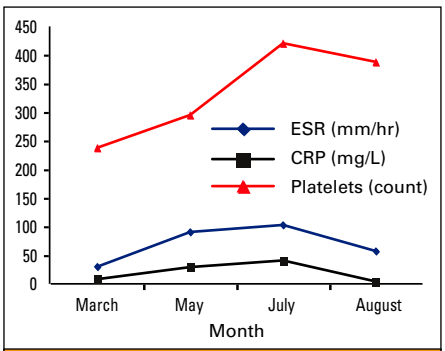

Figure 2. Elevation in ESR, CRP and platelets in the months preceding diagnosis. ESR was elevated in the March (30 mm/hr) and May (91 mm/hr) before diagnosis in July. The CRP became elevated in May (29 mg/L) and the platelets were abnormally elevated at diagnosis (421x10^9). These fell following the commencement of IV methylprednisolone and then oral prednisolone

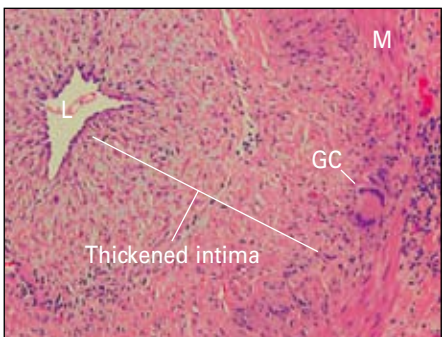

Figure 3. Photomicrograph of the temporal artery biopsy. L = lumen, GC = giant cell in region of internal elastic lamina, M = media (H&E stain x100)

Mrs NB was admitted to hospital and commenced on a 3 day course of high dose intravenous methylprednisolone (1 g) in an effort to prevent bilateral visual loss. Oral prednisolone (55 mg, 1 mg/kg) was then commenced before discharge. At this point her ESR had dropped to 57 mm/hr and her CRP was now 4 mg/L. The thrombocytosis (platelets 388x10^9) had resolved, as had the normocytic anaemia (Hb 118 g/L). The temporal artery biopsy, which was performed 2 days into the admission, revealed histological features consistent with GCA (*Figure 3*).

She was seen 3 weeks later in outpatient clinic to assess her ongoing steroid therapy and to add the steroid sparing agent methotrexate to her regimen. Her ESR had lowered further to 26 mm/hr, however, her visual acuity remained poor at hand movements only. Her other symptoms of GCA had resolved.

Discussion

Giant cell arteritis (or temporal arteritis) is a medical emergency. The reported incidence of biopsy positive GCA in those aged over 50 years varies between 0.5 and 25.4 people per 100 000.[1] It most commonly occurs in caucasian patients over 55 years of age, more frequently affects women, and has a known association with PMR. The inflammation primarily involves the extracranial branches of the carotid arteries (eg. the temporal and ophthalmic arteries), but giant cell aortitis has also been reported. Inflammation in the walls of smaller vessels leads to a narrowing of the lumen and eventual occlusion.[1] Ischaemia then results in symptoms such as jaw claudication, headache (30–80%), and visual disturbances such as amaurosis fugax, hallucinations, diplopia, or irreversible visual loss (<20%). The loss of vision results from ischaemia and infarction of the optic nerve and this results in the appearance of the pale and swollen optic nerve head on fundoscopy. Where the whole optic nerve is irreversibly damaged the whole visual field is lost (global field loss).

The symptom and sign most predictive of the condition are jaw claudication and abnormal temporal artery palpation respectively.[2] A silent or atypical presentation with minimal systemic manifestations has also been described in 8–38% of patients.[1]

The exact cause of GCA remains elusive. It has been hypothesised that either autoimmune and/or infectious processes may play an important role in its pathogenesis.[3] Lymphocytes and macrophages penetrate through all layers of the arterial wall and result in fragmentation of the internal elastic lamina. This is accompanied by expansion of the intima to result in occlusive disease. The systemic effects are mediated through the release of cytokines such as IL-1 and IL-6.[4] These cytokines have an impact upon the liver (release of CRP), central nervous system (anorexia, fever) and bone marrow (anaemia, thrombocytosis).[4]

The association between PMR and GCA has been well established. Polymyalgia rheumatica occurs in the same elderly population, exhibits identical disease risk genes,[5] and has immune abnormalities and elevated acute phase responses similar to those of GCA.[4] Approximately 40% of patients with GCA have PMR and about 10% of patients initially presenting with PMR will have vasculitis on biopsy requiring a revision of their diagnosis.[4] The standard treatment for PMR with low dose steroids unfortunately has no prophylaxis against the blinding consequences of GCA.

Treatment

Once GCA has been diagnosed, initial treatment involves high dose corticosteroids, usually with 1 mg/kg of oral prednisolone. This should be tapered down after 1 month according to CRP and ESR response, then continued for 1–2 years on a lower dose. Generally one should aim to keep the CRP <10 mg/L and the ESR <20 mm/hr. While there is limited evidence for using intravenous methylprednisolone where vision has been affected, it is our policy to use it in the initial treatment of the disease. Even if one eye is irreversibly damaged, careful management is required to avoid damage to the other eye, which has been shown to occur in up to 37% of patients. The use of steroid sparing agents such as methotrexate have been used in an attempt to reduce the side effects of

prolonged steroid therapy, however, there are conflicting results regarding the benefits of such adjuvant therapy.[1]

A rising ESR in a patient with PMR should alert the medical practitioner to GCA. The complaint of jaw claudication, an abnormal temporal artery on examination, anaemia of chronic disease, raised platelets and CRP are also predictors that the patient may develop a severe ischaemic manifestation such as loss of vision. But, importantly, an increase in ESR, even in the absence of typical symptoms of GCA, must prompt an urgent referral for either rheumatologic or ophthalmic assessment. Where there is a high clinical suspicion of GCA treatment should not be delayed while waiting for a temporal artery biopsy as the sensitivity is not significantly affected if the biopsy is performed within 2 weeks of commencing corticosteroid therapy.

Summary of important points

- GCA most commonly affects elderly, caucasian patients.
- Headache, visual changes, jaw claudication, scalp tenderness and abnormal temporal arteries on palpation (tenderness, reduced pulsatility and nodules) are features of GCA.
- GCA is a preventable cause of blindness and can commonly occur in patients with PMR.
- Patients with PMR should have regular ESR and CRP monitoring. Rising levels necessitate examination for GCA and referral for urgent treatment or exclusion of this blinding condition.

Conflict of interest: none declared.

References

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