Figure 1 (a) the right lateral orbital tumour; (b) the right medial rectus compressing the optic nerve; (c) the appearance following orbital decompression and completion of chemotherapy.

suspicion is imperative in order not to miss a diagnosis of orbital cellulitis in this situation. Russo *et al*⁴ have reported a case of orbital cellulitis in a patient with neuroblastoma without orbital metastasis. To the best of our knowledge, no presentation of orbital cellulitis in a case of metastatic orbital neuroblastoma has been hitherto reported.

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Sir,

Recurrent subconjunctival and periorbital haemorrhage as the first presentation of systemic AL amyloidosis secondary to myeloma

Amyloidosis is the deposition of amyloid protein in organs and tissues. The occurrence of amyloid in the eye adnexal structures is well documented but uncommon. Systemic AL amyloidosis is a rare condition in which the monotypic amyloidogenic immunoglobulin light-chain molecule is thought to be the precursor protein. This may be secreted by monoclonal plasma cells infiltrating the tissue and is associated with monoclonal plasma cell proliferations such as myeloma. Clinically conjunctival amyloidosis usually presents as a painless palpable mass¹ and occurs most commonly after inflammatory conditions such as trachoma,² or more rarely with chronic recurring uveitis,³ rheumatoid arthritis,⁴ and Churg–Strauss syndrome.⁵ Systemic forms of amyloidosis usually spare the conjunctiva.⁶ Even with monoclonal gammopathies and multiple myeloma where systemic amyloidosis is common, conjunctival amyloidosis is rare.⁷

Case report

A 53-year-old man presented to an ophthalmology clinic with a history of recurrent sub-conjunctival haemorrhages and periorbital bruising occurring spontaneously or after minimal straining. He also complained of more recent constant diplopia. He had

a past medical history of asthma, bilateral carpal tunnel syndrome, and previous duodenal ulcer. His medications included ranitidine, phyllocontin, and salbutamol and betamethasone inhalers.

On examination, he was noted to have bilateral subconjunctival haemorrhages and periorbital ecchymosis as well as diffuse eyelid thickening bilaterally (Figure 1). There was some limitation of horizontal eye movements and an exotropia for near. There was no proptosis. Pupillary reactions and colour vision were normal. Slit-lamp biomicroscopy revealed normal anterior and posterior segments and intraocular pressures were normal. Systemic examination revealed some purpura over his lower limbs. Cardiovascular, respiratory, and abdominal examination was unremarkable.

He was found to have mild renal dysfunction with normal urea at 6 mmol/l but raised creatinine at 164 μ mol/l. He was also found to have nephrotic range proteinuria at 4.2 g/l over 24 h. Serum electrophoresis revealed a IgG-kappa paraproteinaemia quantitated at 23.7 g/l with immune paresis. Serum light chains were also found to be greatly elevated at 1295.5 mg/ml for κ (normal: 3.6–16 mg/ml) chains, but within normal limits

for lambda chains at 22.5 mg/ml (normal: 3.6–16 mg/ml). Bence-Jones proteinuria was present. He was hypercalcaemic with an adjusted serum calcium of 2.7 mmol/l. His clotting levels were within normal limits and thyroid function test was found to be normal.

He underwent a conjunctival biopsy and magnetic resonance imaging of his orbits as well as bone marrow aspirate and echocardiography. Bone marrow aspirate showed 12% plasma cells with atypia and was diagnostic of myeloma, but cytogenetics was normal. The bone marrow trephine and conjunctival biopsy were positive for amyloid deposition, showing apple-green birefringence to polarized light after staining with Congo red (Figure 2). MRI of orbits ruled out enlargement of the extraocular muscles or orbital mass and echocardiography did not demonstrate cardiac amyloid deposition. Serum amyloid A protein (SAP) scan confirmed the presence of amyloid in the kidneys, testes, and prostate.

It was concluded that his systemic amyloidosis was secondary to an underlying IgG-kappa plasma cell dyscrasia and a diagnosis of systemic AL amyloidosis with renal and soft tissue involvement was made. He was treated with six courses of an infusional regimen of vincristine and adriamycin plus oral dexamethasone. He has made dramatic progress, with a significant decrease in his serum-free light chain levels (κ : 261.9 mg/ml; λ : 12.2 mg/ml) and no further episodes of subconjunctival or periorbital haemorrhage.

Discussion

Amyloid is an amorphous, hyaline-like substance that stains pink with haematoxylin and eosin and demonstrates a characteristic apple-green birefringence when examined by light microscopy under polarized light after Congo red staining. It also has characteristic transmission electron microscopy features. Now-a-days classification of amyloid is based on the nature of its fibrillar component. Amyloid AA is found in secondary amyloidosis and familial Mediterranean fever and is related biochemically to serum amyloid A, an acute phase reactant. Amyloid AL occurs in primary amyloidosis and in association with multiple myeloma. It is usually composed of immunoglobulin light chains, but amyloid due to other disorders of the immune system such as heavy chain disease is also included in this category. The amyloid in familial amyloid polyneuropathy is composed of a prealbumin, mutated transthyretin, whereas senile systemic amyloidosis is composed of normal transthyretin. Amyloid AP is a soluble component found associated with many kinds of amyloid deposits and is not separately classified.^{7–9}

Figure 1 (a) Macroscopically, bilateral periorbital ecchymosis and diffuse lower lid swelling can be seen. (b) Eversion of the lower lid shows a subconjunctival amyloid deposit.

Figure 2 (a) *Conjunctival biopsy*: Staining with Congo red reveals the presence of amyloid in the media of conjunctival arterioles (arrow). (b) *Conjunctival biopsy*: Following staining with Congo red and illumination with polarised light, light microscopy shows characteristic apple-green birefringence in the media of the arteriole (arrow). (c) *I¹²⁵-labelled scintigraphy*: This anterior whole body scan shows serum amyloid P component (SAP) localized to amyloid deposits in the kidneys, liver, testes, and prostate.

The incidence of AL amyloidosis is 8 per million per year, with a male to female ratio of 2:1. It usually occurs between 60 and 67 years with only 1% being under 40 years at diagnosis.¹⁰ The pathogenesis of amyloid deposition is unknown, but infiltrating plasma cells may play a role. In AL amyloidosis, the monotypic amyloidogenic immunoglobulin light-chain molecule is thought to be the precursor protein; these may be

secreted by monoclonal plasma cells infiltrating the tissue.¹¹ This has been confirmed using immunohistochemical techniques and PCR.¹² Giant cells are observed in varying numbers around the amyloid deposit, and a cellular infiltrate composed of lymphocytes and plasma cells is usually present. Association with Bence-Jones proteinuria is well established, and some amyloid deposits have been shown to be homologous with portions of the immunoglobulin light chains.¹³ Syndromes associated with AL amyloidosis include infiltrative cardiomyopathy (20%), nephrotic syndrome (40%), peripheral neuropathy (15%), hepatomegaly (25%), splenomegaly (5%), carpal tunnel syndrome, macroglossia (9%), and gastrointestinal problems including steatorrhea and pseudo-obstruction.

The SAP scan is important in the staging of systemic amyloidosis and levels of serum-free light chains are invaluable in diagnosis in the condition and monitoring response to treatment. The aim of chemotherapy in AL amyloidosis is to suppress the underlying monoclonal plasma cell dyscrasia. When the supply of amyloid-forming monoclonal free light chains is reduced, the balance between amyloid deposition and clearance can be favourably altered. Although complete suppression of the clonal plasma cell disease is desirable, reduction in the amyloidogenic serum-free light chain concentration by 50–75% is often sufficient to lead to the stabilisation or regression of amyloid deposits.

We report a case of systemic AL amyloidosis secondary to multiple myeloma presenting with a history of recurrent subconjunctival and periorbital haemorrhages. The pathogenesis of these haemorrhages is presumably related to vessel fragility due to amyloid deposition within the wall of small blood vessels as clotting parameters were within normal limits in this patient. We report an unusual case, in which recurrent subconjunctival haemorrhage was the presenting complaint for a rare multisystem disorder, namely systemic AL amyloidosis. Subconjunctival haemorrhage is an extremely common and usually innocuous condition and while we do not advocate intensive investigation of every subconjunctival haemorrhage, perhaps further investigation should be considered in recurrent unexplained cases of subconjunctival or periocular haemorrhage, particularly in the presence of eyelid thickening.

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Sir, **Late spontaneous anterior dislocation of an intraocular lens (IOL) with the capsular bag**

We read with interest your recent article regarding a case of right posterior dislocation of a posterior chamber intraocular lens (PCIOL) and left anterior dislocation of a PCIOL 9 and 14 years following cataract surgery.¹ We recently published a small case series about two cases where spontaneous disinsertion of the haptic of a multipiece PCIOL occurred with anterior dislocation of the lenses.² Although our cases are different in that the lenses did not dislocate within the capsular bag, it is interesting to compare several similar points and also to highlight several features not mentioned in this paper.

Looking at Figure 1 of your article, it seems that severe capsular bag contracture has occurred in the left eye of this patient. This may be related to weak zonules, but what is evident is the severe distortion of the superior haptic such that it overlaps a large part of the PCIOL optic, thus shortening its longitudinal dimension. It is almost as if the lens has lost its haptic, as in our cases. In the absence of zonular support (or haptic support in our cases), why then anterior dislocation of the PCIOL instead of dislocation into the vitreous cavity? According to Coleman and Fish's model of accommodation, ciliary muscle contraction generates a pressure gradient between the aqueous and vitreous, causing anterior movement of the lens zonule diaphragm.³ Even without accommodation, transient increases in vitreous pressure from exertion or external ocular pressure may be enough to result in anterior translational movement of the optic (or PCIOL with compressed haptics) forcing the IOL with/without the capsular bag through the pupil.

We believe two factors are important in the posterior dislocation of the right PCIOL of this patient. Firstly, this was a sulcus-fixated lens, with presumably intact haptics. Since the haptic to haptic length is not shortened by capsular contracture, they would effectively prevent this lens from dislocating anteriorly. Secondly, the vitrectomized nature of this eye meant that transmission of anteriorly directed forces would not be as effective and that there was no posterior support for the PCIOL once the remaining capsule lost its zonular attachments.

We feel it is useful also to point out that the parameters suggestive of Marfan's syndrome referred to in the article actually pertain to the Ghent criteria for diagnosing this condition.⁴ Besides this, while it was mentioned that routine investigations were normal and a cardiologist had screened the patient, we were interested whether any specific tests for homocystinuria had been performed; such patients are also known to have a Marfanoid habitus and suffer from ectopia lentis.