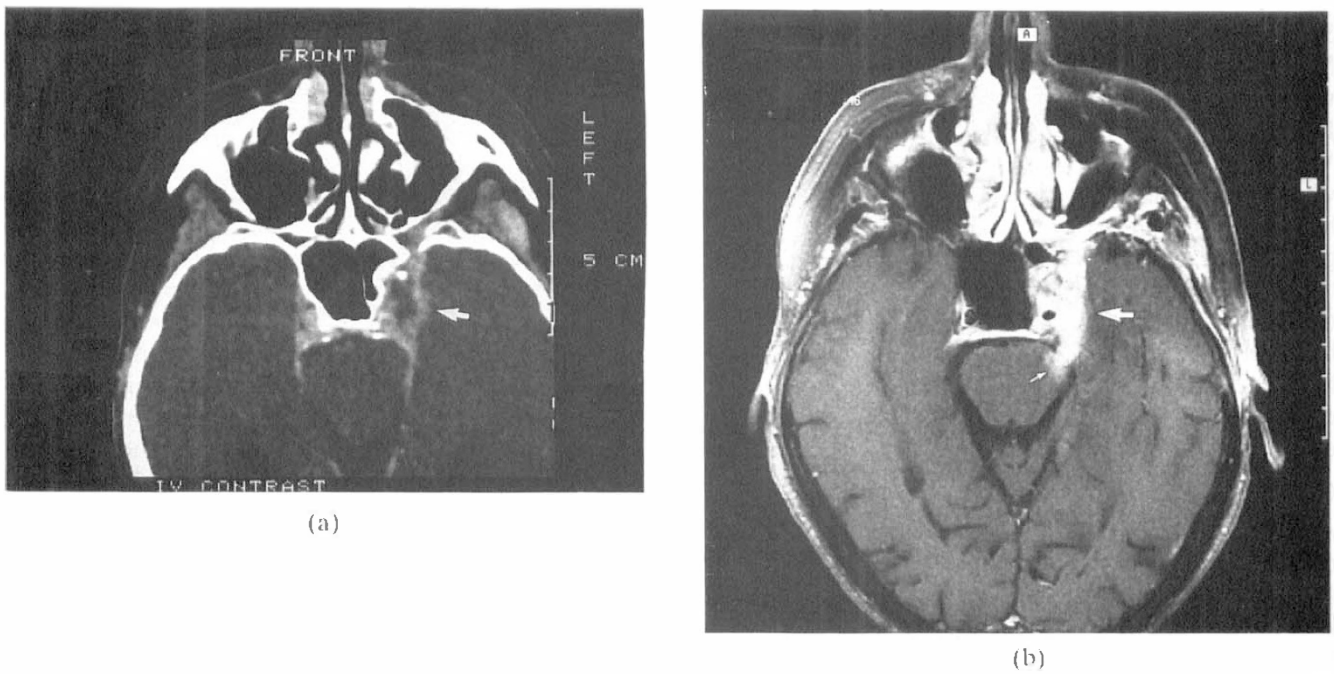

Fig. 3. *(a) Contrast-enhanced CT scan showing an abnormal mass in the left cavernous sinus (arrow). (b) A contrast-enhanced MRI scan shows additional involvement of the trigeminal ganglion and brainstem (small arrow).*

tumour spread from the orbit to the cranial cavity has been directed in cases of primary lacrimal malignancies[3] and in squamous and basal cell carcinomas arising on facial skin.[4,5]

Intraneural extension of a secondary adenocarcinoma from the orbit into the intracranial cavity has not previously been described. In our patient an orbital metastasis from a colonic adenocarcinoma extended by intraneural spread, through the supraorbital and frontal nerves, into the cavernous sinus and subsequently to the trigeminal ganglion and brainstem. The clinical picture, initially one of an orbital lesion with supraorbital nerve signs, evolved into a superior fissure syndrome and finally into a lesion affecting the trigeminal ganglion and brainstem. This sequence was supported by radiographic imaging, where MRI revealed the true extent of the tumour, previously not shown by CT scanning.

MRI scanning is a valuable adjunct to CT in delineating the extent of tumour spread in patients with malignant orbital lesions where extensive intracranial involvement is suspected on clinical grounds.

We gratefully acknowledge the expertise of Professor Alec Garner (histopathology) and Dr Ivan Moseley (neuroradiology).

Eric Ezra
Steven Vardy
Geoffrey Rose*

Moorfields Eye Hospital
City Road
London EC1V 2PD
UK

*To whom correspondence should be addressed.

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Sir,

Bilateral Panuveitis in a Patient with Colonic Adenocarcinoma and *Streptococcus milleri* Liver Abscesses

Bilateral panuveitis in the elderly necessitates investigation, in particular to exclude ocular neoplasms such as lymphoma (formerly reticulum cell sarcoma). The association, however, is rare and in a recent series of 60 patients[1] no evidence of intraocular tumour was found. We present the case of an elderly man with bilateral panuveitis, colonic adenocarcinoma and *Streptococcus milleri* liver abscesses. We speculate that the panuveitis was due to metastases from the bowel tumour although no definitive histopathological evidence was available.

The association between the *Streptococcus milleri* group and large bowel carcinoma is discussed.

Case Report

A 73-year-old man presented to the eye casualty department with a 7 day history of bilateral painless visual loss. There was no previous medical or ocular history and he was on no regular medications.

Visual acuities were light perception only with inaccurate projection. On examination both anterior segments showed signs of marked uveitis (Fig. 1). The pupils were miosed, occluded by fibrinous membranes and there were circumferential posterior synechiae. Intraocular pressures were normal. There was no red reflex and despite intensive treatment the pupils remained miosed. B-mode ultrasonography showed bilateral posterior vitreous detachments and a retinal elevation in the right eye (Fig. 2). A diagnosis of bilateral panuveitis was made and treatment commenced with both topical and subconjunctival steroids and mydriatics. The patient was admitted for further investigations.

A general systemic examination including a rectal examination was normal. Chest radiography was normal and a Mantoux test was negative. Blood tests performed included a full blood count, plasma viscosity, urea, electrolytes, glucose, liver function tests, serum antineutrophil cytoplasmic antibody, autoantibodies, immunoglobulins and a VDRL. The only notable results were a low serum albumin (24 g/l) and a raised IgG level (21.7 g/l). Oral prednisolone was commenced at 60 mg daily. A cranial CT scan, lumbar puncture and bone marrow aspiration were performed as B-cell lymphoma was considered a likely cause. These were all normal except the bone marrow aspirate which showed a relative increase in the number of neutrophils consistent with an inflammatory process.

Ten days after admission there was no clinical improvement and the right visual acuity had worsened. Ultrasonography of the posterior segments remained unchanged. Steroid therapy was slowly curtailed. An anterior chamber tap was performed on the right eye and the pupil enlarged by multiple sphincterotomies. No fundal view could be obtained and the light reflex gave a yellow-orange glow. Bacteriology and cytology of the aqueous fluid was negative. Still pursuing a lymphomatous cause an abdominal ultrasound and CT scan were performed to look specifically for enlarged para-aortic lymph nodes. None were found but multiple cystic areas in the liver were seen (Fig. 3). One of the larger cysts was biopsied by fine needle aspiration and pus obtained. Culture of this grew *Streptococcus milleri.* At this stage a metastatic *Streptococcus milleri* endophthalmitis was considered a possibility and intravenous benzylpenicillin was commenced. Multiple blood cultures prior to and following the ultrasound were sterile. An echocardiogram was performed to search for other foci of streptococci but none was found. B-mode ultrasonography now showed a retinal elevation had developed in the left eye in addition to the right. A left vitreous tap was performed and intravitreal methicillin and

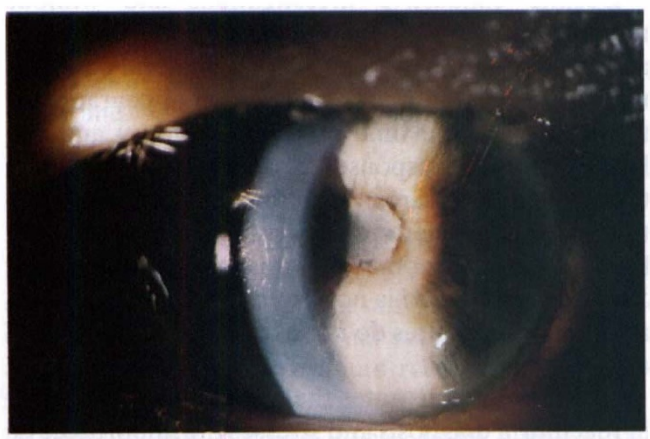
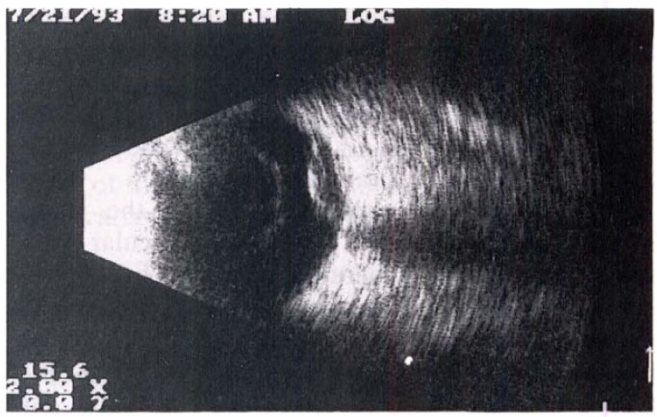
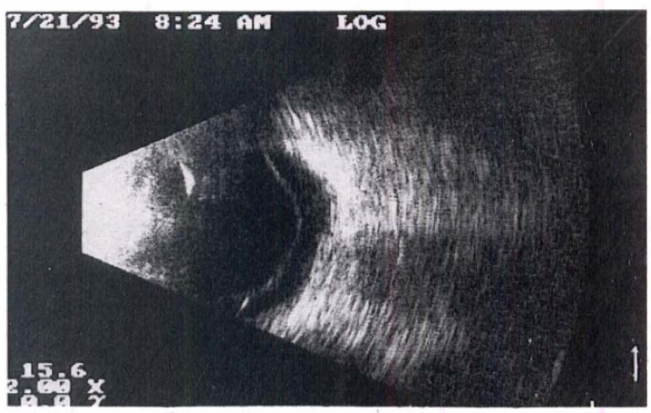


Fig. 1. *Clinical photograph showing the fibrinous uveitis on presentation.*



(a)



(b)

Fig. 2. *B-mode ultrasonogram demonstrating a posterior vitreous detachment and retinal elevation in the right eye (a) but only a posterior vitreous detachment in the left eye (b).*

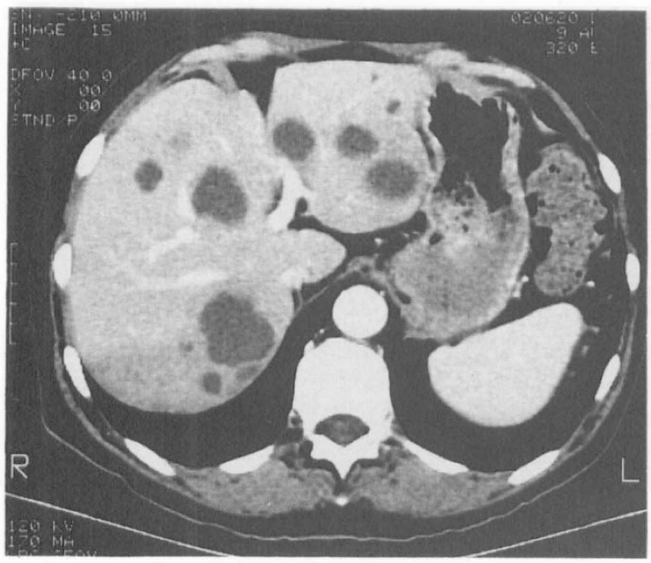


Fig. 3. *Abdominal CT scan showing multiple cystic areas in the liver.*

subconjunctival benzylpenicillin given. Culture and cytology of the vitreous was negative.

In view of the association between *Streptococcus milleri* and large bowel carcinoma a flexible sigmoidoscopy was performed. This revealed a large fungating mass in the sigmoid colon later confirmed as an adenocarcinoma. One week later a sigmoid colectomy was performed when it was noted that the bowel had ruptured and become attached to the bladder wall with local abscess formation.

Six weeks after initial presentation the visual acuities were unchanged but the intraocular pressures had fallen and bilateral cataracts had developed. An ultrasound scan confirmed a right retinal detachment (Fig. 4). As a final attempt to improve the left visual acuity a cataract extraction and anterior vitrectomy was performed. During the vitrectomy it was obvious that the left retina was also detached and showed areas of hyperpigmentation with creamy white choroidal elevations. The vitreous specimens revealed chronic inflammatory cells but no evidence of malignancy or an infective agent.

Discussion

Panuveitis is an unusual presentation of metastases but has been seen in cases of hypernephroma, breast and bronchial carcinoma (S. Lightman personal communication). Choroidal metastases from large bowel tumours are rare. A survey by the Oncology Service at Wills Eye Hospital, Philadelphia, looked at 100 cases of uveal metastases over a 6 year period (1974–1980) and found only 3 were from gastrointestinal primaries.[2] None of the 3 patients showed symptoms relating to the site of the primary tumour, thus making the definitive diagnosis more difficult. Patients presenting with uveitis often suffer a battery

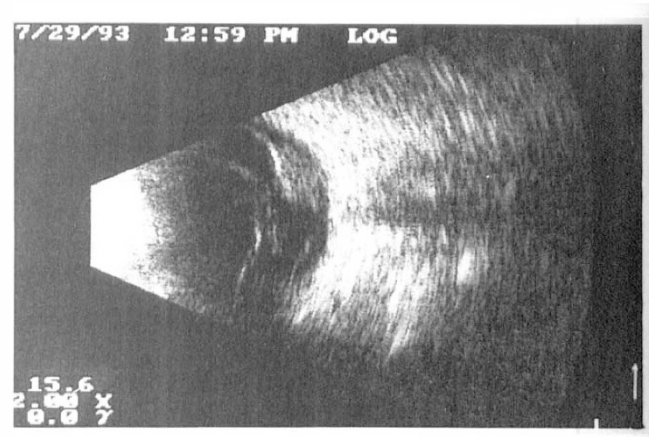


Fig. 4. *B-mode ultrasonogram demonstrating the development of a retinal detachment in the right eye.*

of unhelpful and expensive tests. Kijlstra[3] has suggested a limited number of investigations will identify the majority of treatable cases but up to 40% may remain undiagnosed. It was fortuitous that our patient had an abdominal ultrasound scan demonstrating the liver abscesses from which *Streptococcus milleri* was isolated. *Streptococcus milleri* commonly inhabits the mouth, nasopharynx, gastrointestinal tract and vagina, but more importantly is also associated with serious pyogenic infections. Three species – *Streptococcus intermedius*, *Streptococcus constellatus* and *Streptococcus anginosus* – make up the group; the last is most commonly isolated from the bowel.[4] They are notoriously difficult to culture and often require a carbon-dioxide-enriched medium. Piscitelli *et al.*[5] report that *Streptococcus milleri* infections are associated with a variety of bowel disease, diverticulitis and neoplasia. There have only been 2 cases reported where *Streptococcus milleri* septicaemia was associated with colorectal carcinoma.[6,7] We were unable to demonstrate a generalised septicaemia but undoubtedly streptococci were shed into the hepatoportal circulation with subsequent formation of liver abscesses.

Despite exhaustive investigations and without recourse to absolute histological proof the exact aetiology of this man's devastating bilateral panuveitis remains in doubt. The naked eye appearance of the choroid at the time of vitreous biopsy and the lack of clinical response to appropriate systemic, topical and intracameral antibiotics would suggest that choroidal metastases arising from his large bowel adenocarcinoma were responsible. However, *Streptococcus milleri* is notoriously difficult to isolate and negative cultures do not exclude the diagnosis of an infectious agent.

The case demonstrates the problems encountered in reaching a diagnosis and stresses the importance of high index of suspicion of metastatic disease in elderly patients presenting with bilateral panuveitis.

We would like to thank the microbiology department at The General Infirmary at Leeds for their invaluable help with this case.

A. J. Churchill
D. M. Tole
J. M. Hayward

Department of Ophthalmology
Clarendon Wing
The General Infirmary at Leeds
Belmont Grove
Leeds LS2 9NS
UK

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Sir,

Corneal Keloid: Aetiology and Management in Lowe's Syndrome

Keloids are hypertrophic scars which result from excessive collagen deposition and most commonly occur in the skin following trauma.[1] Keloid formation in the cornea is rare and tends to occur following ocular injury or perforation,[2–5] but has also been reported in association with rubeola[6] and Lowe's syndrome.[7] Congenital corneal keloid has also been described.[2,5,8,9]

Case Report

A 13-year-old boy with Lowe's syndrome developed bilateral corneal keloids. Lowe's syndrome (oculocerebrorenal syndrome)[10] is an X-linked recessive disorder consisting of renal abnormalities with aminoaciduria, proteinuria and renal tubular acidosis in association with mental and psychomotor retardation, and a characteristic facial appearance. It is associated with cataract formation and there is a high incidence of congenital glaucoma.

The patient underwent bilateral lensectomy for congenital cataracts within the first 3 months of life and was successfully fitted with soft contact lenses. Further surgery to enlarge the pupillary axis of the left eye was undertaken at the age of 6 years, and visual acuities stabilised at 6/60 with soft contact lenses. By the age of 11 years, peripheral corneal opacity had developed in the left eye, and progressively enlarged over a 2 year period to form an elevated, glistening, white mass on the inferior cornea (Fig. 1). Similar changes occurred to a lesser extent in the right eye. The appearances were consistent with keloid formation of the cornea.

Discussion

Corneal keloids tend to present with diffuse involvement of the corneal stroma, or as localised nodules which slowly enlarge, and mainly occur following trauma.[2–7] The nature of corneal keloid formation remains obscure. It may originate in the corneal stroma,[2,3,5] or could be associated with incarcerated iris.[4]

A continuity between blood vessels arising from a corneal keloid and vessels in the iris has been reported in association with iris pigment granules in the corneal scar, suggesting that the keloid may have originated from iris tissue.[4] Excessive proliferation of fibrovascular connective tissue during the healing phase of an inflammatory reaction or perforating injury of the eye may result in keloid formation, and iris incarceration in a wound may be a stimulatory factor.[3]

However, in a report of 4 cases of corneal keloid, it was shown that the principal blood supply to the keloid was from relatively normal peripheral cornea and not iris, with iris pigment present only in 1 traumatic case, suggesting that corneal keloid formation resulted from the process of corneal healing.[5] Similarly, an ultrastructural study of a corneal keloid resulting from a non-perforating injury suggested that keloid formation was a result

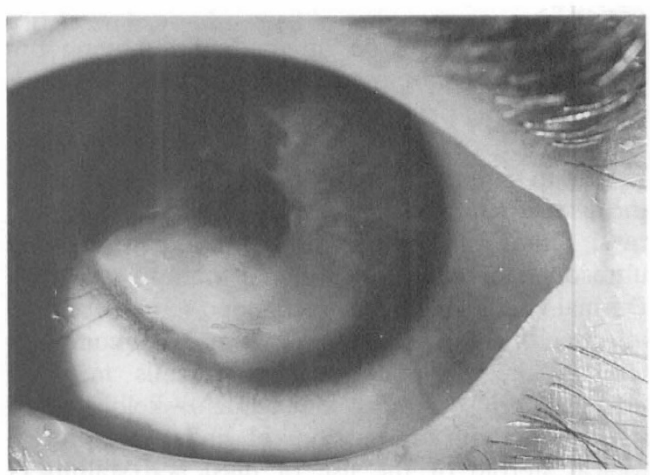

Fig. 1. *Keloid affecting the inferior cornea of the left eye.*