An unfamiliar course of a familiar illness: a rare ophthalmic complication of urinary sepsis

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Abstract

Uncommon complications may occur in the context of illnesses encountered frequently in later life. They may be difficult to both identify and manage in a drowsy, confused patient, particularly in the absence of collateral information. We present an unusual ocular complication in a patient with systemic sepsis from a urinary tract infection, an unquestionably common diagnosis in older patients admitted to hospital.

Keywords: older people, endogenous endophthalmitis, urinary tract infection, elderly

Case report

An 81-year-old woman with long-standing type 2 diabetes mellitus, mild cognitive impairment and deafness was admitted having become bedridden, confused and verbally non-communicative over a 24 h period. She had several witnessed rigors but did not exhibit focal urinary, respiratory or gastrointestinal symptoms. She was drowsy, febrile, and a mild bilateral conjunctival inflammation with scleral injection was noted. She did not engage ocular movements to auditory or visual cues, interpreted as confusion related. A soft ejection systolic murmur and scattered right basal chest crackles were present. Cataracts obscured retinal views. Haemoglobin was 10.9 g/dl, white cells 24.3×10^9/l with neutrophilia and pO_2 on air was 8.1 kPa; otherwise, initial investigations were unremarkable. She was given intravenous saline, cefuroxime, chloramphenicol eye drops and an insulin sliding scale. The pupils became fixed in mid-dilated position, and a right-sided hypopyon developed. The red reflex was lost, and no pupillary response to light or topical 1% tropicamide was observed. Pus began to exude from the left eye, and a tense bilateral periorbital cellulitis developed, which fused the eyelids shut (Figure 1). Cranial computed tomography (CT) was done (Figure 2).

Contrast-enhanced CT showed left orbital proptosis, preseptal swelling, a thrombosed left superior ophthalmic vein (Figure 2) and an unequal enhancement of the left cavernous sinus, suggestive of thrombosis. Blood and urine culture grew *Klebsiella terrigena*, sensitive to ciprofloxacin, cephradine, gentamicin, piperacillin/tazobactam and meropenem. The eye swab was culture negative. She was treated with unfractionated heparin, intravenous ciprofloxacin, topical ofloxacin, atropine drops and intravitreal gentamicin. Over the next 5 days, she deteriorated and subsequently died.

Discussion

Endophthalmitis is the presence of replicating organisms, associated with inflammation, within the eye [1]. Subtypes include postoperative, bleb-related (implanted filter for
glaucoma), post-traumatic, endogenous, and infection by immediate spread [2]. Endogenous (metastatic) endophthalmitis (EE) accounts for just 2–8% of all infectious types and results from intraocular tissue invasion by organisms arising from an extraocular source [3, 4]. Despite its recognition since 1856, visual impairment still results in up to 75% of cases [3]. Predisposing conditions include endocarditis, diabetes mellitus, immunocompromised states, indwelling intravenous catheters, invasive surgery, gastrointestinal procedures, malignancy, alcoholism and intravenous drug abuse [5–7]. The urinary and biliary tracts, intra-abdominal abscesses, pneumonia and meningitis are recognised sources [5]. Symptoms include reduced vision, eye pain, photophobia and floaters [7, 8]. Findings include reduced visual acuity, vitreitis, conjunctivitis, iritis, retinitis, hypopyon (pus in the anterior chamber) and retinal detachment [6]. Although successful culture has been reported from urine, wound swabs, intraocular and cerebrospinal fluid, blood culture remains a high-yield investigation [5, 7, 8].

While Gram-positive organisms account for the majority of postoperative endophthalmitis, Gram-negative bacteria account for up to 29% in EE and are associated with gastrointestinal and urinary infection [5, 8, 9]. Gram-negative EE is more frequently reported in East Asia: Klebsiella pneumoniae was the most frequently isolated pathogen in two case series from Singapore [10] and Taiwan [11]. Bilateral involvement is often seen with meningococcus, Escherichia coli and Klebsiella species [5]. The association of Klebsiella species with suppurrative liver disease and diabetes is well documented [4, 11, 12]. Klebsiella endophthalmitis is associated with poor visual outcome and may requireenucleation [9, 12, 13]. The cornerstone of treatment is prompt diagnosis and early intensive intravenous high-dose antibiotic therapy. Subconjunctival or subtenon antibiotic administration may be considered, but evidence for its additional benefit is lacking [3]. If progressive deterioration occurs, intravitreal administration is indicated.

In our case of metastatic bilateral Klebsiella panophthalmitis secondary to urinary sepsis, many features are consistent with previous descriptions [5, 11, 13]. Early concern regarding visual impairment was difficult to evaluate in an acutely ill and drowsy patient. The assumption that failure to engage ocular movement was due to confusion proved incorrect, and collateral information regarding eyesight would have been helpful. The vague presentation lacked specific features to implicate urinary sepsis, and importantly, early signs of ocular involvement were misinterpreted as concomitant conjunctivitis. This case highlights the need for clinicians to be vigilant for the appearance of ophthalmic symptoms and signs in a septic patient. Urgent attention and early specialist involvement is needed should they develop.

Key points
• Unusual complications of common illnesses affecting older people should be entertained if atypical features occur.
• Assessing visual function in confused unwell older adults is difficult and should be revisited at an early stage with the aid of collateral information.
• Eye symptoms and signs in a patient with septicaemia should be dealt with as a potential ophthalmic emergency, with specialist input required at an early stage.

References
Inclusion body myositis (IBM), a condition characterised by progressive muscle weakness and inclusion bodies visible on muscle biopsy, is the most common type of myopathy in patients over 50 years of age. However, it is not only underdiagnosed but frequently misdiagnosed as polymyositis and hence wrongly treated with steroids [1, 2, 3]. In the evaluation of progressive weakness in older Caucasian males, IBM should be an important diagnostic consideration. Treatment-resistant ‘polymyositis’ in patients over 50 years of age is often IBM. If there is no histological confirmation, the diagnostic criteria allow for a category of ‘possible IBM’. Sometimes, the diagnosis is missed because of the slow progression of the disease and a lack of suspicion on the part of physicians. The following case report and literature review will explore many of these issues.

Keywords: myopathy, inclusion body myositis, older people, elderly