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Sir,

Metastatic choroidal abscess and choroidal neovascularization in a patient with *Staphylococcus aureus* renal abscess

Metastatic choroidal abscess is a rare subset of metastatic endophthalmitis. Septic emboli usually arise from focal pyogenic infection, spread through the blood-ocular barrier, and proliferate within the eye. Here, we describe a diabetic patient with *Staphylococcus aureus* kidney abscess who developed a metastatic choroidal abscess in the macula. Early ophthalmic evaluation and continued systemic antibiotic treatment resulted in a localized choroidal abscess without progression to fulminant endophthalmitis. However, late complication of choroidal neovascularization (CNV) led to vitreous haemorrhage and profound visual loss. To our knowledge, the occurrence of CNV secondary to metastatic choroidal abscess in a patient with *S. aureus* renal abscess has never been reported before.

Case report

A 48-year-old male with irregularly controlled diabetes mellitus was admitted via the Emergency Room due to persistent fever and chills for 3 days. Right renal abscess was diagnosed after abdominal sonography, computed tomography (CT) abdominal scan (Figure 1), and systemic evaluation. The fasting blood sugar level was 210 mg/dl. The patient was treated with tight diabetic blood sugar control, intravenous antibiotics, and ultrasonography-guided renal abscess aspiration. The cultures from blood and the pus of abscess showed *S. aureus*, which was sensitive to cefazolin. His medical condition became stable a few days after the intervention and systemic antibiotics; the follow-up CT scan showed gradual resolution of the renal abscess.

After 1 month, he complained of progressive blurring in his left eye. On examination, his best-corrected visual acuity was 20/30 in the right and 20/100 in the left. Both eyes had a quiet anterior segment and vitreous, while the fundus examination showed retinal heamorrhages, lipid exudates, and cotton-wool spots in both eyes, which were compatible with nonproliferative diabetic retinopathy. A well-demarcated, round, grey, and slightly elevated mass approximately 1 disc diameter (DD) in size was noted 1 DD temporal to the fovea in the left eye (Figure 2). Fluorescent angiography displayed a

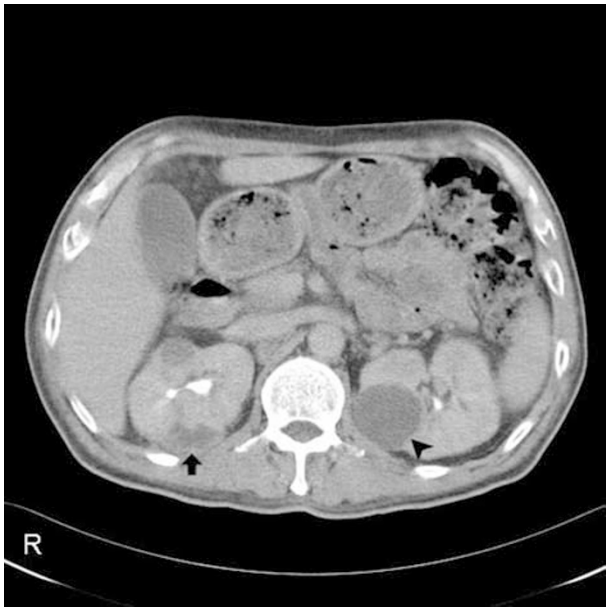
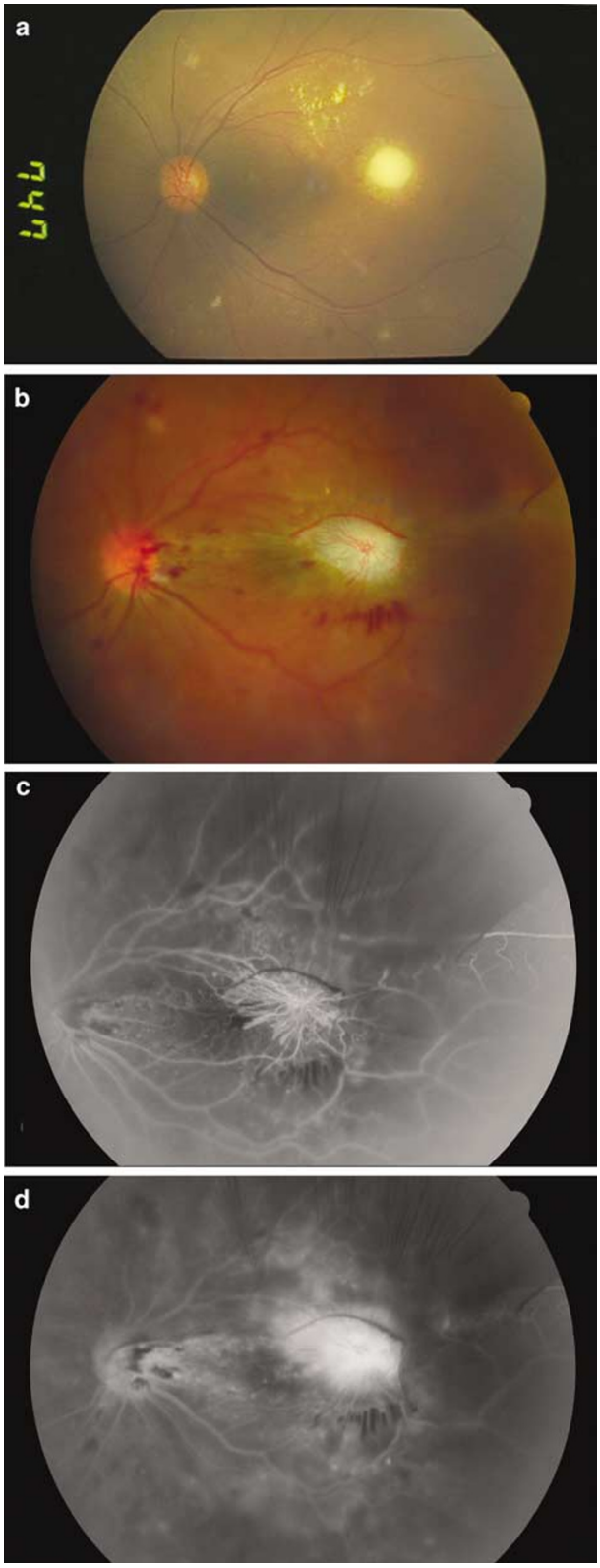


Figure 1 Computed tomography abdominal scan showed several small low-attenuation lesions (size about 1–3 cm) with irregular shape and septa noted in right kidney (arrow), compatible with the formation of renal abscess. Simple renal cyst (arrowhead) was also noted in left kidney.

hypofluorescent lesion. Systemic examination was unremarkable except the renal abscess mentioned above.



An initial diagnosis of presumed metastatic choroidal abscess was made, and the patient was kept on continued systemic cefazolin treatment. Gradual consolidation of the choroidal abscess had the appearance of a solitary choroidal granulomatous lesion during the follow-up examination. Intravitreal antibiotics were not given because the lesion remained localized and improved without progression to vitreous after systemic antibiotic treatment. Unfortunately, 2 month later, the patient's left eye vision deteriorated to 20/400 because of vitreous haemorrhage and preretinal haemorrhage. Fundus examination showed a CNV in a sea fan-like pattern just beneath the previous site of active choroidal abscess (Figure 2). It was well-delineated and hyperfluorescent in the early phase of fluorescent angiography, and there was marked leakage of fluorescein dye into the vitreous from the neovascularization in the late phase. Transpupillary thermotherapy (TTT) hyperthermic procedure (setting as following: spot size 1.2 mm, power 200 mW, exposure 60 s) was performed to treat the CNV tuft in the left eye. After 3 weeks, the CNV resolved, leaving a gliotic scar just temporal to the left fovea. Subsequent pars plana vitrectomy was carried out to clear the vitreous haemorrhage and preretinal haemorrhage in the same eye. The vision of the left eye remained 20/100, 6 months after operation.

Comments

Haematogenous spreading of infectious agents, mostly bacteria, is the aetiology of metastatic infectious choroiditis or endophthalmitis.[1] The underlying medical conditions of susceptible hosts include diabetes mellitus, intravenous drug abuse, cardiac valvular abnormality,[2] malignancy, and immune-compromised patients. Mowat *et al*[3] suggested the defect in the chemotaxis function of leukocytes in poorly controlled diabetic patients, as this case, probably makes such patients more susceptible to bacterial infection. Besides due to bacteria, metastatic choroidal abscess caused by mycotic organisms, such as *Nocardia, Aspergillus*, and atypical *mycobacterium*, had been reported by the opportunistic infection occurring in

Figure 2 Fundus photography showed a well-defined, slightly elevated, localized choroidal abscess in the macula of left eye (a) and ordinary findings of nonproliferative diabetic retinopathy. After 2 months, a choroidal neovascularization (CNV) tuft (b) developed just beneath the previous choroidal abscess, complicated with vitreous haemorrhage and preretinal haemorrhage along the posterior hyaloid face. Fluorescent angiography showed a well-delineated and hyperfluorescent CNV in the early phase (c), and marked, fluffy fluorescein dye leakage from CNV in the late phase (d).

patients of AIDS, immunosuppressed status, or after organ transplant.[4–6]

The case reported here represents a presumed metastatic septic embolus to the choroid from a renal abscess. The diagnosis of metastatic *S. aureus* choroidal abscess was based on the identification of the organism in blood cultures and on isolation of the organism from the ultrasonography-guided renal abscess aspiration. In a recent literature review, *S. aureus* is among one of the most common Gram positive causing organisms in endogenous bacterial endophthalmitis.[7] In cases of diagnostic dilemma, transvitreal fine needle aspiration of a choroids abscess may be used to establish the diagnosis.[8]

Treatment with intravenous antibiotic is essential for patients with metastatic choroidal abscess. Although penetration of the antibiotics into the eye is often poor and may be inadequate, systemic antibiotics are mandatory as these are life-threatening events. Most cases of metastatic choroidal abscess progress to endophthalmitis as a result of a delay in treatment. This case presented with a partially treated metastatic infection, that is why it was not a fulminant endophthalmitis but did emphasize that continued systemic antibiotics were required. Intravitreal antibiotic injection and surgical drainage are the other therapeutic options of choroidal abscess. Frequent ophthalmologic examinations are required to determine the optimal management in individual patient.

The complication of CNV secondary to bacterial infectious choroiditis/abscess is not well recognized by most physicians, mainly because it is rare. The temporal events make it an obvious and unsurprising result given the chronicity of this presentation. Munier *et al* described two cases of acute bacterial endocarditis with multiple metastatic septic emboli in the choroids; subsequent CNV occurred after 10 months and 5 years, respectively, at the choroidal scars.[2] Coll and Lewis reported a patient of *S. aureus* endocarditis in a heroin user. Metastatic choroidal abscess was also found, and subsequent CNV with retinochoroidal vascular anastomosis developed 1 week later.[9] Our case resembles the one reported by Coll *et al*, whose CNV developed in the early stage of metastatic choroidal abscess. It appeared that the inflammation was still active, and every chorioretinal process affecting Bruch's membrane kept the capability for the development of CNV. We recommend that patients with metastatic choroidal abscess should be carefully followed up, because these patients are at risk of developing secondary CNV.

In conclusion, metastatic choroidal abscess can arise from renal abscess in a diabetic patient. Prompt diagnosis and early systemic antibiotic treatment are mandatory to prevent its progression to fulminant endophthalmitis. The subsequent occurrence of CNV is a rare, but potentially devastating complication.

Acknowledgements

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Sir,

Metastatic choroidal melanoma to the ipsilateral orbit 7 years after enucleation

Metastasis of choroidal melanoma to the contralateral orbit is rare.[1] Only one case with bilateral orbital involvement has been previously reported.[2] To our knowledge, we present the first case of choroidal melanoma metastasis to the ipsilateral orbit, 7 years after enucleation.

Case report

In 1993, a 47-year-old man was referred because of a tumour in the right eye. His general history was unremarkable. He had no family history of cutaneous or ocular malignant melanoma or dysplastic naevus syndrome. On examination, the best-corrected visual acuity of both eyes was 1.0 (logmar scale). Fundoscopy showed a prominent pale tumour superotemporal to the fovea. The left eye was normal. Ultrasonography showed a tumour base of $9 \times 10\,mm^2$ and a thickness of 8 mm. Choroidal excavation was obvious with decreased internal amplitudes in the tumour on the diagnostic A scan. There were no signs of extrascleral extension. General physical examination and laboratory tests were unremarkable. With a diagnosis of primary malignant choroidal melanoma the patient was treated with brachytherapy using a Ruthenium applicator (apical dose: 143 Gy) combined with transpupillary thermotherapy (TTT).[3] After 2 years of tumour regression, a vitreous haemorrhage occurred with a complete retinal detachment. The visual acuity of the right eye was reduced to hand movements. In 1995, the eye was enucleated and an Allen-type orbital implant was placed.

Histological examination showed scar tissue and some loose pigment at the site of the irradiated tumour, without evidence of residual melanoma. Extrascleral outgrowth could be excluded. At 5 years after enucleation, the patient developed multiple biopsy-proven metastases in the liver, the diaphragm, skin, and the spine. He received palliative treatment.

In 2002, 7 years after enucleation, he presented with sudden onset of ptosis of the right upper eyelid and poor prosthesis fit (Figure 1). On examination, the prosthesis as well as the orbital implant were displaced inferiorly and anteriorly. The right vertical eyelid fissure was 3 mm and the levator function was 7 mm. There was a mass palpable in the right upper eyelid. Orbital CT-scans revealed two soft tissue lesions. One was located in the anterior part of the superior rectus muscle (Figure 2, top left), the other was localized in the posterior section of the medial rectus muscle and extended into the optic nerve canal (Figure 2, top right, bottom). No informed consent was obtained for diagnostic confirmation. In September 2003, the patient died from carcinomatosis. Regrettably, consent for postmortem examination was not obtained.

Comment

Metastatic orbital melanoma usually originates from the skin.[1] Nine cases of metastasis of a choroidal melanoma to the contralateral orbit after enucleation have been reported.[1] Massy *et al*[2] described an 81-year-old man who developed multiple orbital metastases bilaterally 8 years after enucleation. Our patient developed metastases in two extraocular muscles 7 years after enucleation. Although local recurrence of the choroidal melanoma cannot be ruled out, this seems highly unlikely, because two separate lesions were present and both occurred in the extraocular muscles, which are a predilection site for metastatic melanoma.[4] In addition, both the sudden onset of blepharoptosis and the histopathology after enucleation, which revealed no extrascleral extension, point to metastasis as main cause. Our case is in agreement with previous reports that melanoma

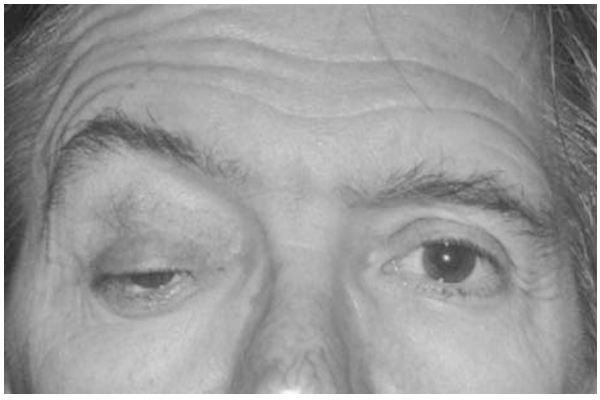

Figure 1 Clinical appearance of patient showing ptosis and prosthesis displacement on the right side.