A 26-year-old healthy white man returned to Washington, DC, from visiting Puerto Rico, in June, 2016. The day after his return he developed chills, myalgia, arthralgia, and a centrifugal skin rash, and was given a diagnosis of Zika virus infection by his physician, confirmed by real-time PCR (RT-PCR) assay (US Centers for Disease Control and Prevention [CDC]) on a serum specimen taken on the fifth day of illness. RT-PCR assays for Dengue and Chikungunya viruses were negative. A week after his return, he developed 1 week of redness of both eyes without discharge, which resolved without treatment, but was followed a week later by flashes of light (photopsias) in the left eye. Ophthalmic examination showed visual acuities of 20/20 and normal anterior segment in both eyes, but 0·5+ cells in the vitreous (graded on a scale of 0 to 4+) on dilated fundus examination and scattered faint mid-peripheral yellow-white lesions in the left eye only. The patient was started on loteprednol etabonate 0·5% ophthalmic suspension three times daily to the left eye and referred to our uveitis service, about 1 week after onset of his ocular symptoms and 1 month after his return.

He reported some improvement but remained mildly symptomatic with photopsias. His visual acuities were stable at 20/20 and the anterior segment was normal bilaterally. The mild vitreous inflammation in the left eye had completely resolved. Fundus examination of the right eye remained normal, but the left eye had nasal pigmented outer retinal and choroidal lesions (figure).

Involvement of the retinal pigment epithelium was confirmed by fundus autofluorescence, which showed hyperautofluorescence (appendix). Optical coherence tomography (OCT) imaging showed hyper-reflective nodular elevations in the outer retina at the site of these pigmented lesions (figure, appendix, video). Indocyanine green dye (ICG) angiography (used to visualise the choroidal circulation) showed foci of hyperfluorescence in a circumscribed pattern, consistent with active choroidal lesions (appendix) in both eyes, although funduscopy and OCT showed no changes corresponding with these areas. We did an anterior chamber paracentesis and both aqueous humor and conjunctival swabs tested negative for Zika virus on RT-PCR testing (CDC). The patient’s serum also tested negative for rapid plasma reagin, anti-Epstein Barr Virus IgM antibodies, and antibodies against HIV 1/2, Borrelia burgdorferi, Cytomegalovirus, and Mycobacterium tuberculosis. In view of the resolution of anterior vitreous inflammation and the peripheral location of the left chorioretinal lesions on fundoscopy, we decided to stop the topical steroids. At follow-up examination 4 weeks later, his visual acuities remained unchanged. The nasal chorioretinal lesions in the left eye appeared less prominent and showed less hyperautofluorescence, suggesting they were resolving, and repeat OCT showed improved outer retinal changes (appendix). The patient is scheduled for routine follow-up care.

We believe this is the first reported case of bilateral posterior uveitis and acquired chorioretinal lesions associated with Zika virus disease. The presence of chorioretinal lesions in the left eye and several foci of leakage on ICG angiography bilaterally are suggestive of lesions at different stages of activity. We do not yet understand the cause of these chorioretinal lesions.

Many reports have described congenital chorioretinal lesions after maternal infection with Zika virus, but few have described ocular complications in adults. Furtado and colleagues described bilateral low-grade anterior uveitis in a Brazilian man who developed ocular symptoms 8 days after the onset of systemic symptoms, which resolved with topical glucocorticoid therapy; the aqueous sample from his right eye tested positive for Zika virus on RT-PCR, but repeat testing from the left eye was negative. The negative aqueous sample from our patient could mean that anterior uveitis did not occur in this case or that the virus might no longer be detectable 1 month after the onset of symptoms. A case of unilateral acute maculopathy in a 64-year-old white man with positive Zika virus serology has also been reported. He developed
unilateral decreased vision 10 days after the onset of systemic symptoms, after returning from a mission trip to Haiti, and had perifoveal retinal pigment epithelium changes and subfoveal disruption of the outer retina and retinal pigment epithelium on OCT, which later improved. Panuveitis has also been recorded in mice inoculated with Zika virus. Zika viral RNA found in the tears of inoculated mice and in conjunctival swabs taken from patients up to 7 days after the onset of fever have suggested that tears and conjunctival fluid might be a reservoir for Zika virus. Nevertheless, it remains unclear whether the chorioretinal lesions are a direct effect of infection or secondary to an immune-mediated process.

Our case highlights the need to monitor for visual symptoms in patients with Zika virus and to refer symptomatic patients urgently for ophthalmic assessment. Visual symptoms and ocular findings might be the only manifestation of Zika virus infection in some patients. The right diagnosis of posterior uveitis is important because lesions involving the macula threaten vision, and long-term follow-up of patients with Zika virus-associated posterior uveitis is essential to monitor the sequelae of inflammatory chorioretinal lesions.

Contributors
All authors contributed to patient management and writing of the report. Written consent to publication was obtained.

References