ued, but the IOP remained low and the visual acuity dropped from 20/30 to 20/60 OS. Gonioscopy revealed a cyclodialysis cleft in the area of the surgical iridectomy. The retinal examination findings were noted to be normal by the glaucoma and retinal subspecialists. Stratus OCT showed retinal folding consistent with hypotony maculopathy (Figure 3A). The patient was given 1% atropine, and the IOP increased to 52 mm Hg with presumed closure of the cyclodialysis cleft. The use of glaucoma medications reduced the IOP to 16 mm Hg. After the glaucoma medication was tapered, the IOP stabilized in the 11- to 13-mm Hg range. Best-corrected visual acuity improved to 20/30 OS with resolution of retinal folds on Stratus OCT (Figure 3B).

Comment. Hypotony, defined as “low pressure in an individual eye leading to functional changes and structural changes,” is an uncommon complication of glaucoma filtration surgery. However, a recent review suggests that the incidence is increasing, most likely due to increased use of antifibrotic agents in trabeculectomy. Hypotony can reduce vision by producing corneal edema, induced astigmatism, cystoid macular edema, or hypotony maculopathy. However, some patients may have unexplained visual loss associated with hypotony that improves with normalization of intraocular pressure. It is possible that such patients have subclinical hypotony maculopathy that goes undiagnosed by fundus examination, as in the current case series. Subtle cystoid macular edema may also be identified with OCT.

Optical coherence tomography can be helpful in diagnosing suspected hypotony maculopathy in patients with reduced visual acuity and normal ocular examination results associated with ocular hypotony. Because retinal folds are typically oriented in the 0° to 180° axis, careful review of all radial line scans may be necessary to diagnose this condition.

Donald L. Budenz, MD, MPH
Kenneth Schwartz, MD
Steven J. Gedde, MD

Correspondence: Dr Budenz, Bascom Palmer Eye Institute, 900 NW 17th St, Miami, FL 33136 (dbudenz@med.miami.edu).

Financial Disclosure: None.


Fluorescein Interference With Homocysteine Testing

Measuring plasma homocysteine levels is increasingly common in the evaluation of patients with retinal vascular disease for a possible hypercoagulable state. Fluorescein administered in angiographic studies may interfere with blood tests using fluorescein-labeled reagents, as...
well as other methods, measuring near its 493.5-nm absorption maximum or 525-nm emission wavelengths or involving fluorescence quenching. To our knowledge, this is the first report of fluorescein interference with plasma homocysteine testing.

**Report of a Case.** A 37-year-old man was referred to the Lahey Clinic in Burlington, Mass, for decreased vision of 2 months’ duration in the right eye. The patient had a history of hypertension and Crohn disease for which he took multiple medications, including prednisone.

At initial examination, his best-corrected visual acuity was 20/80 OD and 20/25 OS. Results from dilated funduscopic examination, fluorescein angiography, and optical coherence tomography were consistent with findings of a central retinal vein occlusion in the right eye. Workup for a hypercoagulable state was initiated. Approximately 1 hour after administration of fluorescein dye, the patient’s blood was drawn. The workup revealed an iron deficiency anemia with a hematocrit level of 25% (reference range, 42%-52%). The homocysteine level could not be measured because of high background fluorescence. One week later, his homocysteine level was normal at 1.58 mg/L (11.7 µmol/L) (reference range, 0.54-1.62 mg/L [4-12 µmol/L]).

Plasma homocysteine level is measured at the Lahey Clinic laboratory by fluorescence polarization immunoassay (Abbott AxSYM; Abbott Laboratories, Chicago, Ill). The high background fluorescence, demonstrable with UV illumination ([Figure](#)), interfered with detection of the fluorescein label used in this assay, resulting in an error code. This is a competitive, homogeneous immunoassay. Assays of this type do not have wash steps or phase separations, so all of the constituents of the sample, including the fluorescein contaminant, are present in the final reaction mixture. The likelihood of interference is influenced both by the concentration of fluorescein in the patient’s sample and the sample volume for a particular test relative to the total reaction volume.1

Heterogeneous immunoassays, a much more common method of analysis, include 1 or more separation steps. For example, the analyte of interest may be bound by antibody to a solid phase, or they may be precipitated together. Other sample components do not bind, are washed away, and so are no longer present as potential interferences when the eventual result, fluorescent or otherwise, is measured.

Fluorescein interference after angiography has been reported for a number of fluorescence polarization assays, including those for serum creatinine, total protein, cortisol, thyroxine, digoxin, quinidine, and cyclosporine levels.2,3 Of these, cyclosporine level is commonly measured by fluorescence polarization immunoassay. Fluorescein interference has also been reported with tests performed on the Kodak Ektachem (Kodak, Rochester, NY), including measurements of serum amylase, unconjugated bilirubin, and conjugated bilirubin levels; minor spurious elevations are reported for aspartate aminotransferase and alkaline phosphatase measures. Urinary creatinine and protein, serum total protein, magnesium, and chloride measurements using the DuPont aca (DuPont, Research Triangle Park, NC) and Beckman Astra analyzers (Beckman Coulter, Fullerton, Calif) are also reported to have interference by fluorescein following retinal angiography.4,5

Elimination of fluorescein predominantly occurs through the kidneys within 36 to 48 hours if renal function is normal. Interference with serum testing has been noted up to 12 hours later in individuals with normal renal function.2 Interference may persist much longer in individuals with renal impairment, common among patients with diabetes mellitus. Ophthalmologists should be aware of the potential interference of fluorescein from retinal angiography in serum and urinary tests and manage patients accordingly.

Nancy L. Flattem, MD
Jeffrey L. Marx, MD
John Gawoski, MD

Financial Disclosure: None.

Correspondence: Dr Marx, Department of Ophthalmology, Lahey Clinic, Burlington, MA 01805 (jeff.marx@lahey.org).

©2005 American Medical Association. All rights reserved.
Bilateral Multifocal Choroiditis With Serous Retinal Detachment in a Patient With Brucella Infection: Case Report and Review of the Literature

Brucellosis is a zoonotic disease caused by the gram-negative bacteria Brucella melitensis or Brucella abortus. It is transmitted from animals to man through the ingestion of unpasteurized milk, milk products, or uncooked meat. The diagnosis of systemic brucellosis is clinically suggested in patients with fever, arthralgia, myalgias, anorexia, sweating, headache, and malaise. The onset can be acute or insidious, generally beginning within 2 to 4 weeks after inoculation. A variety of ocular complications have been reported in patients with brucellosis. Ocular inflammations are generally a late manifestation consisting variably of dacryoadenitis, episcleritis, chronic iridocyclitis, nummular keratitis, multifocal choroiditis, exudative retinal detachment, and optic neuritis. Rare cases of endogenous endophthalmitis have been reported in which Brucella species have been isolated from vitreous humor.

The purpose of this case report is to describe a case of multifocal choroiditis associated with serous retinal detachment in both eyes, without any other general symptoms, as the initial sign of brucellosis. Fluorescein and indocyanine green (ICG) angiographies of this disease are, to our knowledge, described for the first time.

Report of a Case. The patient was a 39-year-old man of Arab-Bedouin origin with a severe reduction of vision in the right eye. He had had “dust” in his left eye for 1 week and in the right eye for 4 days before admission. There were no other symptoms, known diseases, or known allergies. The patient admitted intake of raw, unpasteurized goat’s milk in the right eye for 4 days before admission in the right eye. He had had “dust” in his left eye for 1 week and in the right eye for 4 days before admission. There were no other symptoms, known diseases, or known allergies. The patient admitted intake of raw, unpasteurized goat’s milk in the past.

On examination, visual acuity was 6/240 OD and 20/20 OS. Results of slitlamp examination of the anterior chamber and vitreous of both eyes were normal. Results of ophthalmoscopic examination of the right eye showed hyperemic optic disc with serous retinal detachment of the posterior pole that included the macula, associated with multiple, deep creamy whitish yellow choroidal lesions (Figure 1A). Similar lesions sparing the macula were seen in the left eye (Figure 1B).

Fluorescein angiography demonstrated multiple hyperfluorescent lesions in the middle phase and late leakage of the lesions. Minimal staining of both optic nerves was seen, with no significant leakage (Figure 2). Results of ICG angiography were notable for multiple hyperfluorescent and hypofluorescent spots in the early and intermediate phases. The late phase showed multiple hot spots with large areas of hypofluorescence (Figure 3). The A and B scan ultrasonography showed shallow peri-papillary retinal detachments without choroidal thickness.

Results of the physical examination were entirely normal. Results of the systemic workup, including serologic testing for syphilis, tuberculosis, and antinuclear antibody, were normal. Brucella infection was also considered because of the history of intake of raw unpasteurized goat’s milk. Results of serologic testing for Brucella species using the agglutination method were positive at a titer of 1:160. Brucella blood cultures were negative.

The patient started therapy consisting of streptomycin sulfate, 1 g/d in an intramuscular injection for 2 weeks, and doxycycline hyclate, 100 mg orally twice daily for 6 weeks. After 1 week of treatment, mild anterior uveitis, expressed as fine keratic precipitats with 1+ flare and 1+ cells, developed in both eyes. Serous detachment of the fovea de-