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BILATERAL METASTATIC ENDOPHTHALMITIS CAUSED BY *STAPHYLOCOCCUS EPIDERMIDIS*

(metastatic endophthalmitis/Staphylococcus epidermidis)

Michiko KANAMORI,* Seiji HAYASAKA,* Tomoichi SETOGAWA,* Masahiro TAKESHITA,**,*** and Shuji AKAGI,**

Departments of *Ophthalmology and **Internal Medicine, Shimane Medical University, Izumo 693, Japan; ***Internal Medicine Division, Hirata City Hospital, Hirata 691, Japan

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A previously healthy 75-year-old man received intravenous antibiotics for fever. After treatment, he experienced a sudden loss of vision and demonstrated intraocular hemorrhages and whitish retinas bilaterally. A biopsy of the liver disclosed an abscess. Staphylococcus epidermidis grew from vitreous aspirate of the left eye. The left eye was eviscerated 1 1/2 months after the onset, and the right eye became phthisical, despite systemic and intravitreal antibiotic therapy.

Metastatic endophthalmitis is characterized by intraocular infection resulting from the hematogenous spread of bacteria or microorganisms (1). Metastatic endophthalmitis caused by Staphylococcus epidermidis is very rare (1). We treated a patient with this condition who initially exhibited intraocular hemorrhages and whitish retinas. A poor outcome resulted in both eyes.

CASE REPORT

A previously healthy 75-year-old man experienced fever, headache, and anorexia on October 14, 1987. Despite treatment with an antifebrile agent, the high temperature persisted.

The patient was referred to us on October 17. His past medical and family histories were noncontributory. He denied trauma and drug abuse. Laboratory test results showed leukocytosis (white blood cell count, 14,100/cu mm) and increased levels of C-reactive protein (3+), serum glutamic-oxaloacetic transaminase (122 units/ml), and serum glutamic-pyruvic transaminase (71 units/ml). Fasting blood glucose and amylase levels were within normal range. A chest roentgenogram revealed normal findings. No heart murmur was heard. The patient was given intravenous cefazolin sodium, 3 g/day.

On October 18, he had a sudden loss of vision and mild pain in both eyes in the evening. His visual acuity was hand motion in the right eye and light perception in the left. His upper eyelids were mildly edematous, but ptosis was absent. No exophthalmos was noted. The conjunctiva was hyperemic bilaterally. Both corneas were clear. A hyphema was visible in the right anterior chamber. The pupils were miotic. The intraocular pressures were 15 mm Hg in both eyes. Vitreoretinal hemorrhage, a whitish retina, and macular cherry-red spot were seen in both eyes through dilated pupils. A diagnosis of central retinal artery and vein occlusions was suspected in both eyes. Atropine, and sisomycin eyedrops were prescribed. Results of extensive laboratory examinations failed to identify the cause of the leukocytosis. Bacterial cultures from a blood sample were negative.

On October 19, visual acuity decreased to light perception in the right eye. Views of the fundus were occluded bilaterally by massive vitreous hemorrhages. Fever and headache persisted.

On October 20, the white blood cell count increased to 16,100/cu mm. The intravenous antibiotic was changed to cefmetazole sodium, 6 g/day. Poor general condition, decreased visual acuities and the hyphema persisted. The patient refused vitrectomy or intravitreal antibiotics treatment. Three days later, the white blood cell count and C-reactive protein levels normalized. On October 23, the intravenous antibiotic was changed to piperacilline sodium, 4 g/day.

On October 28, ultrasonography of the abdomen disclosed a focal cystic area in the liver. The hyphema and cellular floaters gradually subsided, and keratic precipitates, posterior synechias, and lenticular opacities became visible in both eyes. The intraocular pressure was 20 mm Hg in the right eye and 35 mm

Hg in the left. B-scan ultrasonography demonstrated abnormal diffuse substances in both vitreous humors. Electroretinographic responses were nonrecordable in both eyes. The fundi were occluded by hazy media. Systemic signs of inflammation were nearly resolved. Intravenous antibiotic was changed to cefoperazone sodium, 2 g/day.

On November 5, a liver biopsy was performed. The histopathologic specimen showed disorganized liver tissue, many neutrophils, and no neoplastic cells, indicating a liver abscess. A bacterial culture from a liver specimen was negative.

On November 8, the patient complained of left ocular pain. The left intraocular pressure had increased to 35 mm Hg. Iris bombe was noted. The patient refused enucleation or evisceration.

On November 10, the content of the left vitreous was aspirated through the pars plana. Histopathologic examination of the Giemsa stained sample disclosed abundant amorphous substances, and a few neutrophils. Gram-positive material was present. After an intracapsular cataract extraction and intravitreal injection of gentamycin, 300 μg, were performed in the left eye, yellowish-white substance was visible in the left vitreous. Bacterial culture from a scraping material of the preoperative cul-de-sac was negative. But, Staphylococcus epidermidis grew from the vitreous aspirate, which was sensitive in vitro to cefazolin, cefmetazole, piperacillin, cefoperazone, sisomycin, and gentamycin.

On November 22, the left visual acuity fell to no light perception. The patient complained of left ocular pain.

On November 26, the vitreous content was aspirated, and gentamycin, 300 μg, was intravitreally injected in the right eye. Histopathologic examination of the aspirate demonstrated abundant amorphous substances and a few neutrophils. Evisceration of the left eye was performed. Histopathologic evaluation of the eviscerated materials showed marked destruction of the intraocular tissues and infiltration of neutrophils and necrosis, indicating an intraocular abscess. Bacterial cultures from the right vitreous aspirate were negative.

In December the right eye became phthisical, and visual acuity fell to no light perception.

DISCUSSION

Our patient developed fever and leukocytosis, suggesting an infectious process. A few days later, intraocular hemorrhages and whitish retinas were seen in both eyes. Hyphema has been associated with several diseases (2), but is rarely reported in metastatic endophthalmitis (1). Bilateral intraocular hemorrhages after a trial of intravenous antibiotics in our patient made it difficult to diagnose the condition promptly. Also, viral, or fungal, and bacterial infections, neoplastic diseases, Behçet's disease, sarcoidosis, and acute retinal necrosis may produce a similar appearance (1).

Our patient had an intense inflammatory reaction in the vitreous of both eyes that obscured the fundus, but no proptosis. According to Greenwald and associates (1), our patient's condition may be classified as posterior diffuse metastatic endophthalmitis. The disease carries a poor prognosis, regardless of management (1).

Staphylococcus epidermidis, a low virulent bacteria, is reportedly the most frequent organism found in septicemic patients with cotton-wool spots and retinal hemorrhage (3), is a common cause of postsurgical bacterial endophthalmitis (4), but is rarely implicated in metastatic endophthalmitis (1). The possibility that the organism could have been a contaminant may be excluded in our patient, because of negative bacterial culture of preoperative sampling of the cul-de-sac, positive Gram-staining in the vitreous aspirate, and the growing of S. epidermidis. Our patient had a culture-proved S. epidermidis metastatic endophthalmitis.

The brain, heart, urinary tract, abdomen, skin, and upper respiratory tract have been remote sites of infection in metastatic endophthalmitis (1). Despite negative bacterial culture, the liver may have caused the hematogenous spread of the bacteria in our patient.

Host factors in metastatic bacterial endophthalmitis include diabetes mellitus, recent surgery or trauma, cardiac abnormality, leukemia or lymphoma, among others (1). In our patient, however, no predisposing condition was found.

The involvement of both eyes reportedly occurs in one-fourth of the cases of metastatic endophthalmitis (1). Simultaneous occurrence bilaterally is typical (1), as in our patient.

Systemic antibiotics, intravitreal injection of antibiotics, and vitreous surgery may be useful treatment for postsurgical or traumatic endophthalmitis. Usefulness of vitrectomy in postsurgical Staphylococcus epidermidis endophthalmitis is reported (5). However, blindness is the probable outcome of posterior diffuse metastatic endophthalmitis (1). Greenwald and associates (1) suspect that this form of endophthalmitis begins with occlusion of the central retinal artery by a septic embolus. Our patient's whitish retinas and macular cherry-red spots may have reflected this condition.

It remains unknown what caused the liver abscess, and why metastatic endophthalmitis occurred after systemic administration of antibiotics sensitive to the bacteria in this case.

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