

Late Ophthalmologic Manifestations in Survivors of the 1995 Ebola Virus Epidemic in Kikwit, Democratic Republic of the Congo

Kapay Kibadi, Kibadi Mupapa, Kivudi Kuvula,
Matondo Massamba, Djuma Ndaberey,
J. J. Muyembe-Tamfum, Mpia Ado Bwaka, Ann De Roo,
and Robert Colebunders

Kikwit General Hospital, Kikwit, and Department of Microbiology,
University of Kinshasa, and Ministry of Public Health, Kinshasa,
Democratic Republic of the Congo; Institute of Tropical Medicine,
Antwerp, Belgium

Three (15%) of 20 survivors of the 1995 Ebola outbreak in the Democratic Republic of the Congo enrolled in a follow-up study and 1 other survivor developed ocular manifestations after being asymptomatic for 1 month. Patients complained of ocular pain, photophobia, hyperlacrimation, and loss of visual acuity. Ocular examination revealed uveitis in all 4 patients. All patients improved with a topical treatment of 1% atropine and steroids.

Between January and June 1995, an Ebola (EBO) epidemic occurred in the city of Kikwit and the surrounding villages in the Bandundu region of the Democratic Republic of the Congo [1]. The cumulative total of suspected cases of EBO hemorrhagic fever (EHF) was 316, of whom 245 (77%) died. During the acute phase of EBO infection, several ocular manifestations have been observed. A conjunctival injection, a relatively early sign of EHF, was seen in ~48% and 58% of the patients during the Kikwit [2] and Yambuku epidemics, respectively [3]. During the EBO epidemic in Kikwit, a bilateral conjunctivitis during the acute phase of the epidemic was highly predictive for the diagnosis of an EBO infection; subconjunctival hemorrhages have also been reported [4]. In Kikwit, certain patients with EHF complained of blurred vision or blindness during the acute phase of their illness. The etiology of these ocular manifestations remains unclear because ophthalmologic examinations, such as fundoscopy, were considered potentially risky procedures for health care workers (the nurse-ophthalmologist at Kikwit General Hospital died during the EBO epidemic; she may have been infected by contact with infectious blood).

During a follow-up study of surviving EBO patients, the following symptoms were noted: fever, arthralgia, myalgia, headache, fatigue, bulimia, and amenorrhea [2]. One patient developed a unilateral orchitis, 3 developed parotitis, and 4 survivors had visual problems. Herein, we describe the latter 4 patients.

Patients and Methods

Twenty (28%) of the 71 EBO survivors were enrolled in a 3-month follow-up study. These patients were chosen because they were easy to contact and willing to participate. All participants were seen at regular intervals.

Three participants (15%) presented with ocular manifestations during the convalescent period of their infection. In addition, we also describe a fourth EBO survivor outside this cohort, who also had ocular problems. During their acute illness, all 20 EBO survivors and the additional noncohort patient met the clinical definition for infection with EBO that was used during the epidemic. Moreover, serologic results (ELISA) were positive for EBO infection for all 21 patients. The clinical features of the 4 EHF cases during the acute EHF illness were similar to the clinical features observed in other EHF patients.

The ocular examination comprised visual acuity, bio-slit lamp microscopy of the anterior eye segment, and fundoscopy.

Results

Case 1. A 44-year-old African man complained of ocular pain, photophobia, hyperlacrimation, and progressive visual loss 42 days after the first symptoms of EBO infection. Physical examination showed a conjunctival and ciliary injection of the right eye. An acute anterior uveitis was diagnosed. The patient was treated with topical 1% atropine and a steroid; the condition subsided over several weeks.

Case 2. A 37-year-old African woman attended the clinic because of a foreign-body sensation in her eye, ocular pain, photophobia, hyperlacrimation, a red eye, and progressive visual loss in the left eye 72 days after the onset of EHF. Physical examination showed a conjunctival injection and a serious degree of visual loss in the left eye. An ophthalmologic examination showed normal visual acuity of the right eye (6/6) and decreased visual acuity of the left eye (6/60).

The anterior segment of the right eye was normal, and the left eye showed a conjunctival and ciliary injection, keratic precipitates, and iridolenticular synechia. The posterior segment was normal in the right eye but invisible in the left eye because of vitreous opacities. An acute iridocyclitis and signs of posterior uveitis in the left eye were diagnosed. The patient was treated with atropine drops and steroids, and recovered within 4 weeks.

Case 3. A 25-year-old African woman complained of ocular pain, photophobia, hyperlacrimation, and progressive visual

Reprints or correspondence: Dr. Robert Colebunders, Institute of Tropical Medicine, Nationalestraat 155, 2000 Antwerpen, Belgium (bcole@itg.be).

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loss in the right eye 45 days after onset of EHF. Physical examination showed a conjunctival injection of the right eye. An ophthalmologic examination demonstrated decreased visual acuity of the right eye (6/24) and normal visual acuity of the left eye (6/6). The anterior segments were bilaterally normal. In the posterior segment of the right eye, vitreous opacities were seen. A posterior uveitis of the right eye was diagnosed. The patient was treated with topical 1% atropine and steroids, and all ocular abnormalities subsided within 3 weeks.

Twenty-two days after the onset of disease, EBO viral antigens were no longer detectable in blood or plasma by an antigen-capture ELISA test, but the EBO virus remained detectable by polymerase chain reaction of a conjunctival swab [5].

Case 4. A 32-year-old African woman presented with ocular pain, photophobia, and hyperlacrimation 45 days after the onset of her EHF. Physical examination showed a ciliary injection, and diagnosis of uveitis was made. The patient improved within 3 weeks with treatment with topical 1% atropine and steroids.

Discussion

In all 4 cases, the diagnosis of uveitis was confirmed by an ophthalmologist. In all patients, the ophthalmologic symptoms disappeared after topical treatment with 1% atropine and steroids; however, no control ophthalmologic assessment of visual acuity was done. The pathogenesis of this uveitis may be a delayed hypersensitivity reaction to viral antigens [6]. Other

RNA viruses that may be associated with uveitis include the orthomyxoviruses, such as mumps, measles, subacute sclerosing panencephalitis, and Newcastle disease [7]. Uveitis was also diagnosed during the convalescent period in 1 patient during the Marburg virus outbreak in Johannesburg, South Africa, in 1975 [8]. In that patient, the virus was cultured from the anterior chamber of the eye.

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