THE LITERATURE

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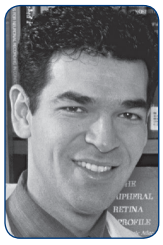

PERSISTENCE OF EBOLA VIRUS IN OCULAR FLUID DURING CONVALESCENCE

Varkey JB, Shantha JG, Crozier I, et al[1]

ABSTRACT SUMMARY

Varkey et al reported a case of uveitis in a 43-year-old male physician diagnosed with Ebola virus disease (EVD) after he worked with Ebola patients in Sierra Leone in West Africa. The patient was discharged after 44 days of treatment for EVD, and the test results of his blood and urine samples were negative. His first ophthalmic examination was conducted 10 weeks after being diagnosed with EVD, and he complained of occasional photophobia and foreign body sensation. The evaluation revealed signs of posterior uveitis with bilateral chorioretinal scars and a visual acuity of 20/15 OU. One month later, the patient presented with pain and photophobia in his left eye and was diagnosed with acute anterior uveitis and severe ocular hypertension. His IOP measured 44 mm Hg OS.

The patient was started on topical steroids and ocular hypotensive agents. The investigators performed an anterior chamber paracentesis. Ebola virus (EBOV) was isolated from the aqueous fluid, confirming the uveitis to be a sequela of EVD. Samples from the patient's conjunctiva, tears, and peripheral blood were negative for EBOV. Oral prednisone was started as a result of the patient's developing scleritis and involvement of the vitreous. The vitritis worsened initially, and the patient's visual acuity dropped from 20/15 to 20/400 OS. As the treatment continued, the anterior segment inflammation and vitritis started to resolve, and a marked improvement was seen in his visual acuity (20/15) at the 3-month follow-up visit.

DISCUSSION

EVD has become a serious issue due to its increasing incidence and the high associated rate of mortality. There have been 26,724 reported cases of EVD and 11,065 reported deaths as of May of this year.[2]

Varkey et al described a case of panuveitis with positive EBOV RNA in the aqueous humor of a patient recovering from EVD. Another study done on survivors of the 1995 Congo EVD outbreak had similar findings: three of the 20 survivors had ocular findings and were diagnosed with anterior, intermediate, or posterior uveitis.[3] They developed symptoms 45 to 72 days after the initial systemic infection. Anterior chamber paracentesis was not performed on any of the survivors, which could have helped to confirm EBOV in the eye. Marburg virus, structurally similar to EBOV, has also been associated with uveitis.[4] The first case reported was of a nurse who developed anterior uveitis 3 months after recovery from the initial viral infection.

EBOV can remain viable in some body fluids and tissues for an extended period of time. The test results of the conjunctival sample and tears were negative for the virus during the recovery phase in this study. A similar study of 29 survivors from the Congo 1995 outbreak had the same results with no evidence of the virus in the tear fluids during the convalescent phase.[5] This implies minimal chances of the transmission of EVD through tears during convalescence.

The exact pathogenesis of uveitis in patients with EVD during convalescence remains a mystery. In recovering patients, antibody titers against the virus are detectable, but it has been indicated that the serum fails to neutralize the replicating virus.[6] This might explain the severity of the ocular findings.

There is a need for further studies of the EVD survivor population to determine how long the organism persists in the eye and to detect any signs of chronic uveitis. Conjunctivitis, subconjunctival hemorrhages, and increased lacrimation have been reported frequently in patients with active disease.[7] Early ophthalmic screening with a dilated fundus examination in patients with active disease is not done routinely. The possibility of uveitis in the initial active stage of EVD must be taken into consideration.

AT A GLANCE

- Because Ebola virus can remain viable in some body fluids and tissues for an extended period of time, the possibility of uveitis in the initial active stage of the disease must be taken into consideration.
- A panel of corneal specialists identified aspects of keratoconus and other ectatic diseases, including the definition, diagnosis, and management of the disease. Of their findings, the panelists agreed that corneal collagen cross-linking is effective in treating progressive keratoconus, but a consensus was not reached on the procedure's role in subclinical keratoconus.

GLOBAL CONSENSUS ON KERATOCONUS AND ECTATIC DISEASE

Gomes JA, Tan D, Belin MW, et al[8]

ABSTRACT SUMMARY

A panel of 36 corneal specialists from all over the world used a modified Delphi technique to obtain a consensus on important aspects of keratoconus and other ectatic diseases, including the definition, diagnosis, and management of the disease.

Primary ectatic disorders include keratoconus (an asymmetric bilateral disease), pellucid marginal degeneration, keratoglobus, and postrefractive surgery ectasias. The panelists identified ectatic progression and the differences between ectasias and other thinning disorders. Abnormal posterior ectasia, abnormal corneal thickness distribution, and noninflammatory corneal thinning were considered mandatory for a diagnosis of keratoconus. The physicians concurred that corneal tomography was the best tool for diagnosing early or subclinical keratoconus, whereas central pachymetry was not a reliable diagnostic tool. Risk factors for keratoconus were identified as Down syndrome, ocular allergy, eye rubbing, floppy eyelid syndrome, a positive family history, certain races, and some systemic syndromes. The physicians also agreed that there was no direct relationship between dry eyes and keratoconus and that contact lenses do not slow or stop the progression of keratoconus.

The panelists agreed that surgery is an option in patients who are not satisfied with medical treatment. Although corneal collagen cross-linking (CXL; not FDA approved) stabilizes progressive keratoconus and postrefractive surgery ectasias, the physicians did not reach a consensus on its use in cases of subclinical keratoconus.

DISCUSSION

Controversy regarding the management of keratoconus necessitated a consensus on its definition, diagnosis, and management. This study used a modified Delphi technique involving multiple rounds of questionnaires similar to the technique used in the management of dry eyes.[9]

New devices with high sensitivity and specificity are being developed for the detection of subclinical keratoconus. A recent advance, corneal tomography images the posterior cornea in addition to the anterior corneal surface.[10] Unfortunately, a suitable classification system using tomography does not exist, and there are several limitations to the old keratoconus classification system.[11] This panel, however, was unable to develop the classification, and it was considered beyond the scope of the study.

Among the available surgical options, CXL is widely used in all age groups with progressive keratoconus.[12] The panelists agreed that CXL is effective in progressive keratoconus, but a consensus was not reached on CXL's role in subclinical keratoconus. Newer CXL techniques are evolving, and Bottos et al have studied transepithelial CXL in animals by using new molecules that may be of significance in the future.[13]

This Delphi panel did not discuss in detail the combination of customized ablation and CXL (also known as *CXL plus*), which is gaining popularity, as a treatment option for keratoconus.[14] The Delphi panel agreed that deep anterior lamellar keratoplasty is preferred by most of the surgeons in cases with either no corneal scarring or scarring limited to the anterior stoma. It is also becoming the treatment of choice for moderate to severe keratoconus and a valid surgical option to obtain good visual recovery in keratoconus patients with a healthy endothelium.[15]

The current Delphi panel successfully addressed many controversies regarding the management of keratoconus, but a few things will need to be addressed in the future. Further corroboration is required to establish a classification system for both clinical and subclinical keratoconus. There is no consensus on the treatment of subclinical keratoconus. There is the possibility of preventing the progression of subclinical keratoconus with CXL. Evolving new techniques of CXL might prove to be the future of treating corneal ectasias. ■

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