Informational Alert: Chagas Disease and Eye Tissue Donation

June 12, 2024

The Policy & Position Review Subcommittee (PPRS) of the EBAA Medical Advisory Board has reviewed the currently available evidence regarding Chagas disease and eye tissue donation. As Chagas disease becomes more prevalent in the United States, particularly in areas where people have migrated from endemic regions, some organ procurement organizations (OPOs) are now testing for it. It follows that eye banks and cornea surgeons may be faced with determining whether eye tissue from a donor with certain Chagas testing results can be transplanted. Here we provide some background information regarding Chagas disease, as well as screening recommendations.

Key Points about Chagas

1. Chagas disease is caused by *Trypanosoma cruzi* and is transmitted by **triatomine bugs** (also known as "kissing bugs"), when they defecate and the organism enters through mucosal membranes or through breaks in the skin.[1] It is found in the Americas, with greatest prevalence occurring in continental Latin America. The disease occurs in two phases: acute and chronic.
2. The **acute phase may be asymptomatic**, or may cause symptoms such as fever, fatigue, loss of appetite, nausea, and vomiting. Swelling at the bite site (known as a Chagoma), eyelid edema (known as Romana's sign), lymphadenopathy, hepatosplenomegaly, myocarditis, or meningoencephalitis may occur.
3. The chronic phase is often asymptomatic (also known as latent or indeterminate) and may remain so for a period of **10 to 30 years**. Up to 30 percent of people may develop severe cardiac (e.g., cardiomyopathy with a risk of cardiac arrest) or gastrointestinal (e.g., megaesophagus or megacolon) complications.
4. The prevalence of Chagas disease in the United States is estimated to be around 300,000.[2]
5. Establishing a diagnosis of chronic Chagas disease requires **two or more tests** (e.g., a screening test followed by a confirmatory test).[3]
6. <u>There are limited data in the present literature regarding Chagas and the eye</u>. One animal study of *T. cruzi* infection demonstrated the presence of **amastigote nests and *T. cruzi* DNA** via polymerase chain reaction (PCR) in the corneal

stroma of two mice during the acute phase of infection.[4] Notably, the mice in this study all died as a result of the infection, raising the question of whether the administered dosage mimics inoculation in humans. In the same study, there were two ocular tissue samples from rats with chronic *T. cruzi* infection in which *T. cruzi* DNA was detected, but amastigotes were not seen. A study of 10 deceased humans with a history of Chagas disease demonstrated *T. cruzi* DNA in a minority of ocular tissue specimens.[5] Clinical reports of ocular *T. cruzi* infection are exceedingly rare.[6]

7. Immunosuppression increases the risk of Chagas disease reactivation (i.e., from latency).[7]

Chagas Screening Recommendations for EBAA Member Eye Banks

1. The EBAA **does not** recommend that eye banks screen for Chagas disease at the present time.
2. Corneal tissue (e.g., penetrating keratoplasty, lamellar keratoplasty): Eye banks **should not exclude** donors with pending, positive, or reactive Chagas test results (e.g., if documented in the donor's past medical history or if ordered by an OPO).
3. Keratolimbal allograft (KLAL) and sclera: Eye banks **should exclude** donors with positive or reactive Chagas test results for KLAL or fresh/non-irradiated/non-alcohol preserved sclera/scleral tissue (e.g., if documented in the donor's past medical history or if ordered by an OPO). Test results must be finalized and confirmed as negative or non-reactive prior to release for surgical use, if testing has been performed (e.g., with a confirmatory test).
4. Ocular tissues that have been terminally irradiated or stored in 70-100% ethanol may be considered acceptable for surgical use regardless of Chagas testing results.[8]

<u>Notes:</u>

1) Although there are data suggesting the possibility of *T. cruzi* presence in ocular tissue, there were a few factors in the PPRS not recommending routine testing by eye banks for Chagas disease at the present time: a) limitations in generalizability of these data to donor tissues b) lack of reported cases of transmission via ocular tissue transplant c) rarity of reported ocular Chagas disease cases d) potential impact on donor supply of routine testing without an estimable reduction in risk. Based on a theoretically higher risk associated with KLAL tissue (due to its containing blood vessels), along with a significantly lower utilization of both KLAL and fresh sclera, the PPRS feels that exclusion of these tissues based on history or test results (if available) should not adversely affect the donor supply.

2) There may be cases in which surgeons are notified of a positive Chagas test result after transplantation. Although we feel that the risk of transmission via ocular tissue transplantation remains low at present (see above), in such cases, the surgeon may consider referring their patient to a primary care or infectious disease specialist for surveillance testing and potential treatment, particularly if the recipient is immunocompromised.

These recommendations will be in effect until further notice or additional criteria are added.

References:

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