Resident's corner

Tear break-up time: practical or passé?

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Traditional diagnostic testing for dry eye has long been led by the mainstay of tear break-up time (TBUT), a measurement of tear film stability. The technique – first introduced by Norn in 1969 – uses a slit lamp and cobalt blue filter to view the tear film after instillation of fluorescein. The first appearance of a dark spot or streak in the tear film denotes the tear break-up time, and is more likely to occur at the temporal periphery. Values vary broadly from 3 to 132 seconds; a TBUT of less than 10 seconds indicates tear film instability, while values of less than 5 seconds are closely associated with dry eye symptoms.

Despite its prevalent use, the technique has long been criticized for its lack of repeatability and standardization. The procedure carries a sensitivity and specificity of 75 percent and 60 percent respectively, but is complicated by a number of factors: individual patients' values vary widely from visit to visit, and medications, surgical procedures (i.e. LASIK) and fluorescein itself have all been shown to independently destabilize the tear film. Due to these variations, there have been repeated efforts to normalize the technique, as well as a trend toward non-invasive measurements of tear film stability.

Conventional wisdom regarding tear break-up time states that tear disruption occurs when lipids absorb to the aqueous/mucin interface. A direct role has also been proposed for mucin thinning in the development of dark spots. A deficient TBUT, however, has been associated with both aqueous-deficient and evaporative dry eye, making a differential diagnosis of these conditions difficult based on this technique alone.

Despite the limitations, tear break-up time remains a practical and popular technique. As with any dry eye test, it evaluates only one aspect of a complex disease and should be analyzed in sum with other techniques to diagnose and manage the patient appropriately.

References


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