Better Late Than Never

Polio is a virus that affects motor neurons, leading to paralysis, whereas keratoconus is a degenerative disorder that causes irregular astigmatism and distorts vision, with multiple images, streaking, and sensitivity to light. What could the two possibly have in common? From my perspective, a great deal. In the United States, polio crippled the motor function of those infected; keratoconus continues to cripple our patients' visual function. Individuals afflicted with polio needed braces and crutches; keratoconus patients require hard contact lenses, scleral lenses, and corneal transplantation. Most famously, polio affected President Franklin D. Roosevelt, but it also infected and often paralyzed thousands of other Americans—58,000 in 1952 alone. In 2012, according to the Eye Bank Association of America, 7,405 Americans required a penetrating or lamellar keratoplasty for keratoconus.[1] Approximately 15% of patients with keratoconus will go on to require a corneal transplant, and about 50,000 Americans developed keratoconus in 2012.[1]

Unfortunately, the similarities end here. The polio vaccine was invented, first tested, and first used clinically in the United States. Many historians consider the eradication of polio in this country to be the greatest medical breakthrough of the 20th century. Ultraviolet (UV) corneal collagen cross-linking (CXL) was invented and studied in Europe, where it is the standard of care for the treatment of keratoconus. The United States is the last developed country in the world where CXL is not approved. More than 50,000 Americans develop keratoconus annually[1] and are visually crippled by a disease that could be treated with a vitamin (B_2) and sunlight (UV light). All ophthalmologists and humanitarians should be angry about this disgrace.

The good news is that the FDA is actively reviewing the CXL trials headed by Doyle Stulting, MD, that took place in 2008 and that there is a strong possibility the agency will approve riboflavin UV CXL this year.

The many advances in riboflavin UV CXL are explored in this edition of *Cataract & Refractive Surgery Today*. Aylin Kiliç, MD, describes Europeans' 16 years of experience with CXL and how the procedure is performed today. Originally, CXL required the removal of the corneal epithelium, which increased the risk of scarring and infection, delayed healing, and could be quite painful. The duration of UV light exposure was 30 minutes. Today, trials are studying epithelium-on CXL with shorter exposure to UV light as a possibly safer, equally effective, and less painful alternative. Roy Rubinfeld, MD, one of the leading innovators and advocates of this technique, provides an overview of CXL in the United States.

In addition, this issue of *CRST* includes an article emphasizing the importance of the corneal surface and dry eye disease by John Sheppard, MD. One of my favorite subjects is the impact of nutrition on ocular health, a topic covered by Gregory Smith, MD. Recently, *U.S. World and News Report* stated that the most important aspect of any nutritional supplement is that it be in the naturally occurring state rather than synthetic.[2]

I hope that the FDA approves riboflavin UV CXL in 2014 and that corneal transplantation for keratoconus becomes a thing of the past within a few years. Better late than never. ■

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1. Eye Bank Association of America. 2012 Eye Banking Statistical Report. http://www.restoresight.org/wp-content/uploads/2013/04/2012_Statistical_Report_FINAL-reduced-size-4-10.pdf. Published 2013. Accessed February 21, 2014.
2. Elkaim Y. How to choose a multivitamin. *U.S. News & World Report*. Published November 8, 2013. http://health.usnews.com/health-news/blogs/eat-run/2013/11/08/how-to-choose-a-multivitamin. Accessed February 21, 2014.