

CLINICAL UPDATE

Facemask or Silence Critical to Reducing Risk of Virulent Endophthalmitis from Intravitreal Injection

The findings of a Jules Stein Eye Institute retina specialist are changing the way colleagues around the country deliver intravitreal injections (IVIs)—and in so doing, may be reducing the incidence of a dangerous infection that can lead to blindness.

Two recent studies by a group headed by Colin A. McCannel, MD, associate professor of clinical ophthalmology and medical director of the Jules Stein Eye Center, Santa Monica, indicate that wearing a facemask or not talking during injections of anti-vascular endothelial growth factor (VEGF) drugs can reduce or eliminate unnecessary cases of streptococcal-

caused endophthalmitis following IVI for macular degeneration or other eye conditions. Their research suggests that the increased rate of endophthalmitis caused by streptococcus associated with IVI in recent years—at a time when larger numbers of patients are receiving IVI injections to treat macular degeneration—is likely due to droplet contamination from the physician's mouth during the injection procedure.

The incidence of endophthalmitis during IVI is rare—in the range of 1 in 2,000 procedures, according to Dr. McCannel. But

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Studies by Dr. Colin A. McCannel, associate professor of clinical ophthalmology, indicate that wearing a facemask or not talking during intravitreal procedures can reduce or eliminate unnecessary cases of streptococcal-caused endophthalmitis.

Thyroid Eye Disease Clinic Promotes Improved Treatment, Enhanced Support

The Thyroid Eye Disease Clinic has been established at the Jules Stein Eye Institute (JSEI) with a threefold mission: improving patient care, enhancing the level of support for thyroid eye disease patients, and providing a focused site for basic and clinical research, along with education of residents, fellows, and visiting clinicians on a disease in which JSEI has long played a leadership role.

“This is a clinic where these patients feel comfortable—a place where they have a support network and where we can have studies to develop new and better therapies that will improve their quality of life,” says Catherine Hwang, MD, the clinic's medical director.

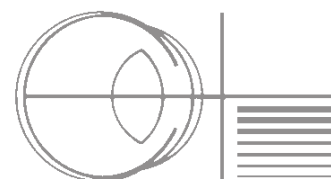
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JULES STEIN EYE INSTITUTE

the consequences of endophthalmitis caused by streptococcal organisms are dire, often resulting in blindness. “This is a particularly virulent organism that almost always leads to a poor vision outcome, which is why it’s so important to prevent these infections,” explains Dr. McCannel. Moreover, he adds, even if the risk of infection from a single injection is low, most patients require frequent injections. “A specialist might do 50-100 of these per week,” says Dr. McCannel, who notes that in addition to macular degeneration, IVI is increasingly used for macular edema from central or branch retinal vein occlusions, as well as for diabetic macular edema. “Given that we perform so many, and that patients are receiving repeat injections, this type of infection is a significant risk that we need to take seriously.”

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Sensing that the rate of streptococcal-caused endophthalmitis appeared to be higher after injection of intravitreal anti-VEGF drugs than in other ophthalmic settings, Dr. McCannel turned to the literature for a thorough meta-analysis. He reviewed 16 papers published between 2005 and 2010 that reported cases of endophthalmitis following IVI of VEGF-inhibiting drugs in the United States. Of approximately 105,000 cases, the incidence of endophthalmitis was approximately one in 2,000.


Among the subgroup of patients from whom cultures were obtained, 31 percent of the infections were caused by streptococcal organisms. By comparison, in a large study of endophthalmitis cases following cataract surgery, 7-9 percent were streptococcal-related, consistent with the findings of a Stanford University study that showed roughly the same percentage of streptococcal organisms are present on the surface of the eye in patients about to receive their first injection. “This confirmed my suspicion,” Dr. McCannel says. “The rate of streptococcal infections from IVI was three to four times higher than the rate of streptococcal infections among patients having ocular surgery.”

Accounting for the difference, Dr. McCannel says that specialists giving intravitreal injections have tended not to wear a facemask, and when they talk to patients they can transmit droplets containing streptococcal organisms into their patients’ eyes. “Our mouth is filled with streptococcal organisms,” Dr. McCannel says. “We are always spitting out microscopic droplets of moisture that have bacteria in them when we are talking, and some of these droplets may be landing on the needle or on the eye surface and contributing to this elevated rate of endophthalmitis caused by streptococcal organisms.”

Following the meta-analysis, Dr. McCannel

and colleagues conducted a study in which 15 volunteers simulated an eye injection appointment with a bacteria culture plate placed on the examination chair where the patient’s head would be. The volunteers tested several situations: they stood silently without a mask; spoke with the face turned toward the patient while wearing a mask; spoke with the face turned toward the patient without wearing a mask; and spoke with the face turned away from the patient. Dr. McCannel’s group found that when the volunteers remained silent or spoke while wearing a facemask, almost no bacteria grew on the plate. Talking without a mask while looking away from the patient produced a higher colonization of organisms—mainly streptococcal—and talking unmasked while looking at the patient produced the most bacteria.

“Physicians should either not talk or wear a facemask to bring the risk back to the baseline, so that only 7-9 percent of endophthalmitis is caused by streptococcal organisms,” says Dr. McCannel. He believes that as word has spread through his publications and presentations, many more practitioners are taking necessary precautions. “In some cases, specialists didn’t like hearing that they had to wear facemasks, but when I emphasized that not talking is a perfectly fine option, the adoption grew,” Dr. McCannel says. Once enough new papers on IVI-related endophthalmitis have been published, he plans to conduct a follow-up meta-analysis to determine whether changes in practice are having an impact on the rate of streptococcal-caused infections.

“The fact that simply putting on a facemask that costs pennies or not talking during the procedure can reduce the risk of such a terrible vision outcome indicates that this is the right thing to do,” Dr. McCannel concludes, “both from an economic standpoint and, more importantly, for the safety of our patients.” 

Thyroid Eye Disease Clinic continued from cover

Graves disease, an autoimmune disorder characterized by overactivity of the thyroid gland, can lead to ophthalmopathy (bulging eyes) in as many as half of patients, as well as other eye-related problems such as double vision and dryness or irritation and, in rare cases, vision loss. But the concerns tend to be psychological as well as functional. “Thyroid eye disease is very difficult for the patients affected,” says Robert Alan Goldberg, MD, Karen and Frank Dabby Professor of Ophthalmology and director of JSEI’s Orbital Disease Center, who sees patients at the clinic along with Dr. Hwang. “The disease occurs in the prime of life, more commonly in women. It changes the appearance of the eyes, causing disfigurement that affects patients’ social interactions and self-confidence.”

Dr. Goldberg and others at JSEI have pioneered both surgical and nonsurgical interventions for treating thyroid eye disease. “Patients can be rehabilitated with minimal-incision approaches, and we can often restore a

significant amount of function and comfort—and in some cases return the appearance to what it was before the eye disease,” notes Dr. Goldberg.

As experts have gained a better understanding of the basic immune processes driving the disease—thanks in large part to research at JSEI—they have become more proactive in treating the disease’s autoimmune aspects. “In the past, the inflammatory part of the disease was typically treated late in the process and only in patients with severe symptoms, such as pressure on the optic nerve or extreme redness and inflammation,” Dr. Goldberg explains. “The paradigm has changed as we treat earlier and more aggressively with the goal of preventing some of the late sequelae.” While corticosteroids continue to be the first-line therapy, they are now more likely to be given in pulsed high doses in an effort to reduce side effects, Dr. Goldberg notes. In addition, newer biologic immune-modulating agents are being used earlier and with greater frequency.

“It’s important to take control of the disease during the active phase,” states Dr. Hwang. Along with the drug treatment, the clinic has increasingly performed nonsurgical interventions during the active phase to address both the functional and cosmetic changes from the disease. For example, hyaluronic acid-gel-filler injections are given to patients with wide-open eyes to stretch the muscle and lower the eyelid. Along with helping their comfort and self-esteem, this approach may enable these patients to avoid the need for eyelid retraction surgery later, Dr. Hwang explains.

JSEI has long been at the forefront of surgical innovations for thyroid eye disease, earning a reputation that has brought patients from all over the world to UCLA for treatment. Almost all of the surgical rehabilitation now takes place on an outpatient basis with smaller incisions, improved outcomes, and greatly reduced complications. As a result, surgery can be used to help a much wider group of patients. While orbital decompression remains the cornerstone of surgical rehabilitation, Dr. Goldberg notes that advances have also been made in other procedures, including muscle and eyelid repositioning surgeries. Small-incision and minimally invasive techniques have also been brought to aesthetic periorbital surgery, an area for which JSEI is particularly well known.

To improve patient care—the first part of its mission—JSEI’s Thyroid Eye Disease Clinic has taken the unusual step of including a rheumatologist, Dr. Ami Ben-Artzi, among its attending clinicians. “He brings expertise in the existing and experimental therapies that treat the disease during the active phase by suppressing the immune system,” Dr. Hwang says. Until now, she notes, medical treatment has involved generalized immunosuppression with the same steroids and biologic agents



The Thyroid Eye Disease Clinic is dedicated to providing enhanced treatment and support to patients with thyroid eye disease. From left to right: Drs. Catherine J. Hwang, clinic medical director; Ami Ben-Artzi, clinic rheumatologist; Dan B. Rootman, clinical instructor; Alice Goh, visiting fellow; Joseph L. Lin, clinical instructor; Jocelyne Kohn, visiting fellow; and Robert Alan Goldberg, director of JSEI’s Orbital Disease Center.



AARP The Magazine ranks Jules Stein Eye Institute as No. 3 in the country for complex eye-care referrals.



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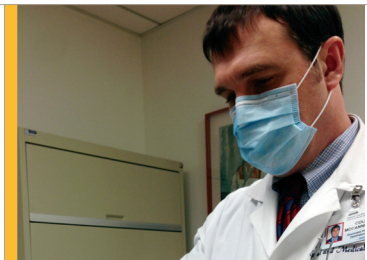
that have been used in other autoimmune diseases. Through research, the JSEI clinic's physicians hope to learn which new and existing drugs will work best with which patients.

Equally important is the clinic's emphasis on patient support. "This is a difficult disease for patients to go through, particularly given how it changes their appearance," Dr. Hwang says. "It's nice to have a clinic where they can interact and provide support to one another." The clinic's structure provides for group education activities, including reviews of treatment options, strategies for ameliorating symptoms, and updates on new research.

The third part of the focus involves research and education. In addition to the studies on medical therapies, the Thyroid Eye Disease Clinic has active protocols investigating new surgical

techniques and quality-of-life outcomes, among others. Basic researchers are unraveling the causes of the disease in the hopes of coming up with better treatments and prevention strategies that might eliminate the need for surgery. With its concentration of thyroid eye disease patients and expert physicians, the clinic also serves as a focal point for education—a site where medical students, residents, fellows, and visiting professors can learn the newest diagnostic and treatment techniques and join in discussions that can lead to new advances.

"Patients appreciate having a clinic where their disease is the sole focus, and where we are actively looking for better treatments and bringing a lot of expertise to bear," says Dr. Goldberg. "I am optimistic that this approach will enable us to completely change the care of patients with thyroid eye disease."



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