

seaboard and be virtually anywhere in the United States by the onset of *V vulnificus* primary septicemia. Furthermore, raw oysters are often transported to distant inland restaurants and oyster bars where they can still harbor infectious organisms, even when transported under proper refrigeration. Although multiplication of *V vulnificus* is inhibited by storage at 4°C (39.2°F),<sup>14</sup> the organism has been recovered from oysters after four days of refrigeration.<sup>15</sup> Finally, although no documented cases of *V vulnificus* infections have been reported in patients in Pacific coastal states, the potential for acquiring both wound infections and septicemia in this part of the country exists.

Physicians caring for patients who present with signs and symptoms of necrotizing fasciitis should consider not only *Pseudomonas aeruginosa*, streptococci, staphylococci, anaerobes and facultative Gram-negative bacilli, but also halophilic *Vibrio* species, particularly *V vulnificus*, in the differential diagnosis. While the development of necrotizing fasciitis is usually related to local trauma or infection, it is uncommon as a manifestation of sepsis.<sup>16</sup> *V vulnificus* seems to be unique as a cause of necrotizing fasciitis from primary septicemia.<sup>9,16</sup> It may be prudent for western physicians to advise their patients who have hepatic disease or are otherwise immunocompromised to avoid eating raw seafood, particularly oysters, which filter and concentrate marine organisms.<sup>5,17</sup>

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## Ophthalmomyiasis Externa in California

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INFESTATION OF HUMANS by the larvae of *Oestrus ovis*, the sheep and goat botfly, is a rare cause of acute conjunctivitis in the United States. It is not uncommon in other areas of the world where extensive sheep herding has brought humans in contact with goats and sheep. These areas include the Mediterranean countries, Central America and Africa.<sup>1</sup> In the United States, most cases have been reported from Santa Catalina Island, off the southern California coast. This island has a large indigenous wild goat population.<sup>2-5</sup>

Ophthalmomyiasis externa is the larval infestation of the ocular conjunctiva and adnexa. Patients with this condition have ocular foreign body sensation, redness, photophobia, tearing, a mild follicular conjunctivitis and a superficial punc-

tate keratopathy.<sup>4</sup> Ophthalmomyiasis interna is intraocular larval penetration, primarily involving the choroid and retina. This can result in iridocyclitis, retinal detachment and endophthalmitis.<sup>6,7</sup> We recently examined and treated a patient with a severe external infestation of *O ovis* larvae.

### Report of a Case

The patient, a 28-year-old man, presented to the UCLA Medical Center emergency room complaining of 12 hours of bilateral ocular foreign body sensation, redness, pain and tearing. He reported that he had spent the day on Santa Catalina Island sightseeing and snorkeling in nearby kelp beds. After a dive, he surfaced and removed his goggles. He immediately noted stinging of both eyes, the right more than the left. Over the next four hours, his intermittent symptoms increased and became constant.

On examination in the emergency room, his visual acuity was 20/25, right eye, and 20/20, left eye. Pupils, ocular motility and visual fields were within normal limits. On external examination he had moderate edema of all four eyelids. Slit-lamp examination showed a mild conjunctival follicular reaction (Figure 1). A large number of small, translucent, white, motile larval organisms was noted in the upper and lower conjunctival fornices of both eyes (Figure 2). Occasionally they were seen traversing the bulbar conjunctiva and cornea. The right eye contained about 50 organisms with about 30 in the left. Both corneas showed superficial punctate staining.

A diagnosis of ophthalmomyiasis externa was made and 0.5% proparacaine hydrochloride and 4% cocaine hydrochloride were administered in an effort to decrease the motility of the organisms to aid in their removal. Copious irrigation resulted in reducing the infestation. Several organ-

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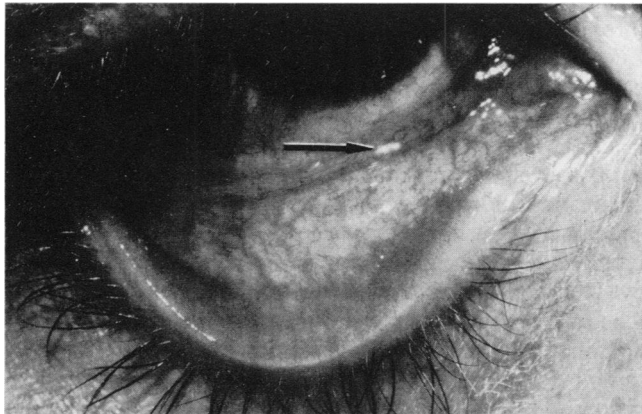
Reprint requests to Stuart R. Seiff, MD, Department of Ophthalmology, U-490, University of California, San Francisco, San Francisco, CA 94143.

isms remained bilaterally, however. An attempt was made to remove the remaining organisms with forceps, but their tenacious adherence to the conjunctivae and the patient's general discomfort made their removal impossible. Instead, Neosporin\* ointment was generously applied to the conjunctival surfaces of both eyes in an effort to suffocate the remaining organisms. The eyes were firmly patched. When the patient returned for follow-up the next morning, the remaining organisms were dead and were readily removed. The patient was treated with topical antibiotic ointment for several more days, and the follicular conjunctival reaction subsided over the ensuing week. A careful fundus examination several days later showed no evidence of intraocular involvement.

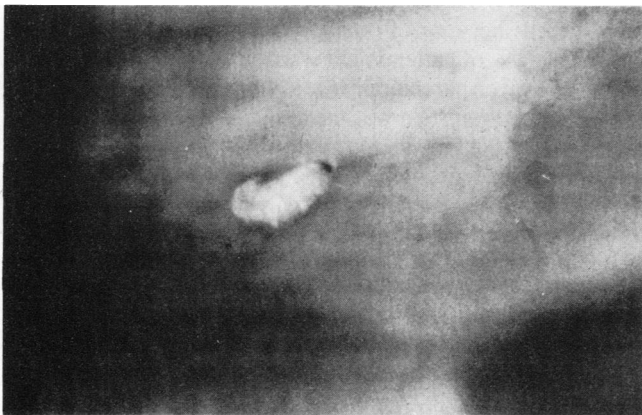
**Comment**

The larvae of *Oestrus ovis* are approximately 1 mm in length. They have two large distinctive buccal hooks and numerous hooklets along the abdominal segments. The botfly larvae are obligate parasites of sheep, goats and occasionally horses. In late summer and fall, gravid female flies deposit as many as 50 larvae in the nares of the above species, either directly or by ejecting a milky stream containing the larvae while in free flight. The larvae mature in the nares or paranasal sinuses. They are then sneezed by the animal onto the soil, where further maturation occurs.<sup>4</sup>

\*Each gram contains polymyxin B, 5,000 units; zinc bacitracin, 400 units, and neomycin sulfate, 5 mg, equivalent to neomycin, 3.5 mg (Burroughs Wellcome).



**Figure 1.**—Mild follicular conjunctivitis, with *Oestrus ovis* larvae in the inferior fornix (arrow).



**Figure 2.**—A slit-lamp photograph of an *Oestrus ovis* larva on the conjunctiva.

In the event that a human is accidentally infected, it is usually via the free-flight spray method. But infection via contaminated water has been reported.<sup>2</sup> When the larvae are deposited on human conjunctivae, they will not mature and can survive for only about ten days, unless the globe is penetrated.

Ophthalmomyiasis externa is primarily a self-limited disease. It has been postulated, however, that these organisms have the ability to penetrate the globe and cause the more serious ophthalmomyiasis interna.<sup>2</sup> Additionally, the irritation caused by external organisms can be severe, as in this case. Thus, prompt diagnosis and treatment are imperative.

Several methods of treatment have been recommended. First, topical anesthetic and anticholinesterase solutions should be administered to immobilize the organisms. Irrigation may be used to eliminate some of the larvae. It has been our experience, however, that even the immobilized organisms tend to cling tenaciously to the conjunctivae. In such cases, the organisms must be removed individually with forceps, which may be difficult in an emergency room. If the individual larvae cannot be removed immediately, we recommend instilling an antibiotic or anticholinesterase ointment in the affected eyes and patching overnight. This will either kill or immobilize the remaining organisms, allowing easier removal later. When infestations are handled expeditiously in this manner, full recovery is likely.

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## Hemolysis, Elevated Liver Enzymes and Low Platelet Count The HELLP Syndrome

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PREECLAMPSIA IS A DISEASE that occurs predominantly in primigravid women and is characterized by the development of hypertension, proteinuria and extracellular fluid retention. Although preeclampsia is a multisystem disease without a single cause, it seems certain that two pathologic processes underlie the clinical course: generalized small artery spasm and increased capillary permeability. A unique group of pa-

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