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REVIEW ARTICLE

Ocular Jellyfish Stings: Report of 2 Cases and Literature Review

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An ocular jellyfish sting is an ophthalmic emergency and is rarely reported in the medical literature. With the evolution of aquatic activities and entertainment in recent decades, we anticipate that more patients with ocular jellyfish stings may be taken to the emergency department. However, most physicians are unaware of the typical presentations, suitable treatments, prognosis, and possible complications of ocular jellyfish stings. We reported 2 cases with ocular jellyfish stings and collected cases series from literature review. The most common clinical features of ocular jellyfish stings were pain, conjunctival injection, corneal lesion, and photophobia. All patients who sustained ocular stings did so during aquatic activities, and the best management at the scene was proper analgesics and copious irrigation of affected eyes with seawater or saline. The ocular lesions were treated with topical cycloplegics, topical steroids, topical antibiotics, topical antihistamines, and removal of nematocysts. The prognosis was good, and all patients recovered without any permanent sequelae. However, symptoms in some patients may last longer than 1 week. Reported complications included iritis, increased intraocular pressures, mydriasis, decreased accommodation, and peripheral anterior synechiae.

Key words: eye, cornea, jellyfish, ocular, management

Introduction

An ocular jellyfish sting is an ophthalmic emergency and is rarely reported in the medical literature. Nevertheless, it may not be an uncommon ocular injury among fishermen in certain jellyfish-prevalent areas. Rapoza et al reported a survey that 82% of watermen in the Chesapeake Bay have sustained ocular jellyfish stings at some time.[1] Most injuries were self-limited and resolved spontaneously within 24 to 48 hours. With the evolution of aquatic activities and entertainment in recent decades, we anticipate that more patients with ocular jellyfish stings may be taken to the emergency department.[2,3] However, most physicians are unaware of the typical presentations, suitable treatments, prognosis, and possible complications of ocular jellyfish stings. Herein, we reported 2 cases with ocular jellyfish stings and conducted a literature review for better understanding of the clinical features and management.

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Case Presentation

CASE 1

A 54-year-old man presented to the emergency department with pain and blurred vision in both eyes after being stung by jellyfish. The offending jellyfish was suspected to be the moon jelly, *Aurelia aurita*. Visual acuity of both eyes was 16/20. Intraocular pressure of the right eye was 12.7 mm Hg and intraocular pressure of the left eye was 15.9 mm Hg. A slit-lamp examination revealed bilateral conjunctival edematous injections, multiple spotted corneal epithelial defects, papillae, and threadlike foreign bodies in his left eye. We irrigated the eyes with saline, removed the foreign bodies, patched his eyes with topical antibiotic ointment, and prescribed steroid and antihistamine eye drops. The patient's ocular symptoms subsided after 2 days of treatment. At the 6-month follow-up visit, no visual defect was found and there was complete remission of ocular lesions.

CASE 2

A 49-year-old man came to the emergency department with severe pain and eyelid swelling in his left eye after

being stung by jellyfish. The offending jellyfish was also suspected as *Aurelia aurita*. He had rinsed the affected eye with seawater at the scene. On ophthalmic examination, visual acuity was 20/20 in both eyes. Intraocular pressure of the right eye was 9.9 mm Hg and intraocular pressure of the left eye was 11.4 mm Hg. A slit-lamp examination revealed conjunctival edema with papillae and white mucoid foreign bodies with multiple linear corneal epithelial defects in the left eye. We irrigated the left eye with saline and balanced salt solution, removed the foreign bodies, patched his left eye with antibiotic eye drops, and prescribed antihistamine eye drops and oral analgesic agent. The patient's ocular symptoms improved after 3 days of treatment, and ocular lesions were not observed under slit-lamp examination suggesting full recovery at 6 months following the injury.

Literature Review

We performed a literature review with the following key words: "ocular and jellyfish," "cornea and jellyfish," and "eye and jellyfish" from 1940 to 2014. The searched databases included PubMed and Google Scholar, and articles were cross-referenced with initial studies. Three case series and four single case reports about jellyfish and eye contact were reviewed.[4–10] Mitchell reported 2 case series in 2 different journals, and the cases presented were similar between the 2 articles.[5,6] Therefore, we included these cases only once to avoid duplication of patients. Furthermore, we added 2 cases from the Chi-Mei Medical Center for data analysis. There were a total of 15 cases including cases reported from reviewed articles. Unfortunately, not all of the patients' demographics and characteristics were universally presented in previous reports; therefore, the sum of each item may not reach 15.

The ages of the patients ranged from 18 to 59, with an average of 34 years. Four cases did not specify sex; hence, there were only 7 men and 4 women. All encountered ocular jellyfish stings during aquatic activities, including swimming (10 patients), fishing (3 patients), and surfing (1 patient). We found 7 left eye, 6 right eye, and 2 bilateral eye involvements (Table).

Most common clinical features of ocular jellyfish stings were pain (100.0%), conjunctival injection (100.0%), corneal lesion (93.3%), and photophobia (73.3%). These reported patients underwent varied combined treatments for ocular jellyfish stings, including topical cycloplegics (60.0%), topical steroids (60.0%), topical antibiotics (53.3%), topical antihistamines (20.0%), and removal of nematocysts (20.0%) (Table). A case series by Glasser et al included 5 cases with increased intraocular pressure post-sting, and all of these patients received topical beta blockers and oral carbonic anhydrase inhibitors to reduce intraocular pressure.[8]

Table. Characteristics, symptoms, and most common treatments of reviewed patients with ocular jellyfish stings

Variable	*Characteristic*
Age	34.1 ± 14.6 (18–59) years (mean ± SD with range)
Sex	7 men
	4 women
	4 unknown
Affected eyes	Left 9
	Right 8
	Bilateral 2
Activities	10 swimming
	3 fishing
	1 surfing
	1 unknown
Symptoms	*No. of patients (%)*
Pain	15/15 (100%)
Conjunctival injection	15/15 (100%)
Corneal lesion	14/15 (93.3%)
Photophobia	11/15 (73.3%)
Increased intraocular pressure	5/15 (33.3%)
Treatment	*No. of patients (%)*
Steroid	9/15 (60%)
Cycloplegics	9/15 (60%)
Antibiotics	8/15 (53.3%)
Antihistamine	3/15 (20%)
Removal of nematocyst	3/15 (20%)

Symptoms, especially pain, longer than 1 week post-sting were discovered in 7 patients.[4,7,8] All cases recovered completely without permanent sequela. Glasser et al found 5 unique patients with iritis, increased intraocular pressures, mydriasis, decreased accommodation, and peripheral anterior synechiae. The authors suspected that the increased intraocular pressure may have been secondary to inflammatory mediators or obstruction of the trabecular meshwork with inflammatory debris.[8] Their ocular changes entirely healed after 3 to 7 weeks of treatment. So far, we did not find any systemic illness or delayed ophthalmic symptoms related to ocular jellyfish stings.

Discussion

Jellyfish venoms are mixtures of polypeptides and enzymes that are toxic to prawns, fish, and mammals.[11,12] Once the victim contacts the tentacles of a jellyfish, the tentacles eject toxin-coated threads from