



Short communication

An unusual marine envenomation following a rope contact: A report on nine cases of dermatitis caused by *Pennaria disticha*Özgür D. Tezcan^{a,*}, Sedat Sarp^b^a Family Medicine, American Hospital, Istanbul, Turkey^b Family Medicine, Medical Pharmacology, American Hospital, Istanbul, Turkey

ARTICLE INFO

Article history:

Received 26 July 2012

Received in revised form 23 October 2012

Accepted 31 October 2012

Available online 19 November 2012

Keywords:

Cnidaria

Hydroid

Pennaria disticha

Envenomation

Sting

Dermatitis

ABSTRACT

We would like to present the clinical course of nine patients who had an acute, painful dermatitis following contact with a rope used as a swimming area liner in the sea. The macroscopic and microscopic analysis of the fouling on the rope retrospectively, revealed *Pennaria disticha* as the causative organism. To our knowledge, there is no previous report on *P. disticha* envenomation in medical literature.

P. disticha is a benthic hydrozoa belonging to Cnidaria phylum. Cnidaria are well known for their envenomation with their venomous organelle, “cnidocyst”. The contact with cnidaria can result in a wide range of cytotoxic or anaphylactic reactions. While there is a large body of data in the literature from studies at molecular and cellular levels, there is limited data about the in vivo effects of cnidaria toxins.

We think the clinical aspects of the dermatologic reactions caused by *P. disticha* and the diagnostic work-up to reveal the contamination on this unusual medium would be of interest to the readers.

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1. Introduction

In July 2009 and August 2010, nine patients with similar complaints presented to the American Hospital's Marine Outpatient Clinic in the southwestern coast of Turkey. All of these patients were complaining of severe pain, burning sensation and skin lesions (Figs. 1 and 4). Another thing in common was the patients' history of contact with a rope that was used as the swimming area liner of a summer resort. The location was the entrance of a busy bay, and the rope, together with the floats were serving to mark and guard the swimming area of the resort from marine traffic.

The doctors working in the clinic were curious about the causative agent. In 2011, at the same season, some samples were collected from the medium (Figs. 2 and 3).

2. Cases and diagnostic work-up

2.1. Cases

Nine cases of dermatitis presented to the Marine Outpatient Clinic of American Hospital, in the Mediterranean coast of Turkey. All the patients had the history of contact, while swimming, with a rope and floats hung on it, which were used for marking the swimming area of a summer resort.

All of the patients had erythema, edema, burning sensation and intense pain.

One case who declared sitting on the rope had bullos lesions in the gluteal regions besides the symptoms mentioned before. The distribution of the lesions were:

* Corresponding author. Amerikan Hastanesi, Güzelbahçe Sok. No:21, Nişantaşı, İstanbul, Turkey. Tel.: +90 532 605 24 28; fax: +90 212 311 21 90.

E-mail addresses: ozgurtezcan@gmail.com (Ö.D. Tezcan), sedatsarp@gmail.com (S. Sarp).



Fig. 1. Dermatitis caused by *P. disticha*, on the right shoulder.

Three abdominal, one upper leg, four gluteal, three axillar, three back and one neck. In three patients there were multiple lesions in different parts of the body. The diameters of the lesions differed from 10×10 cm to 20×30 cm. No systemic reactions were observed.

2.2. Treatment

As there was no patent cause, the cases were diagnosed as unspecified contact dermatitis. Treatment was based on antihistamine, steroid and topical pain relieving gel. This treatment was sufficient to control the symptoms in six cases who had their lesions on leg, abdomen, gluteus and back. In two cases who had their lesions on their axilla needed IV NSAID medication for pain control. One case who had a lesion on the neck region needed IV narcotic analgesic for pain control. The cases were prescribed with oral anti histamines and topical steroids and were called for follow up. Details of the treatments are on [Table 1](#).



Fig. 3. Microscopic photograph of the specimen taken from the rope (MAREM lab).

After 24 h, eight of the nine patients were free of complaints and the margins of the lesions were only slightly visible. All of their lesions disappeared 48 h after contact. The case with bulla on the gluteal region had no complaint, the erythema and edema disappeared but the bulla persisted 24 h after contact.

2.3. Research for the causative organism

The rope contact and dermatitis correlation necessitated a research for the causative agent. On July 30, 2011, samples were collected from the coordinates: $36^{\circ}44'$ N, $28^{\circ}56'$ E. The subject rope was made of polypropylene and there were plastic floats placed every other meter. The rope was 5 cm below water surface while the floats were half



Fig. 2. The dense *P. disticha* fouling on some part of the rope.



Fig. 4. Another case of dermatitis caused by *P. disticha*. Right shoulder.

submerged. The samples were taken from the fouling on the rope and the floats. The specimens were saved in 10% formaldehyde seawater for further work-up. The specimens were analyzed in Marmara Environmental Monitoring (MAREM) Laboratory by hydro biologist Levent Artüz. Among the specimens, the only organism that had stinging capacity was *Pennaria disticha*. The specimens are deposited in the MAREM material museum for further workup and referral with the barcode number: M 0010.

P. disticha, is a benthic hydrozoa, common named as Christmas tree hydroid (Websource 1). It is distributed in almost all circum – (sub) tropical coastal habitats (Websource 2). It is found on artificial and natural hard substances where there is some water movement. Typical locations are docks, pilings, rocks, reefs, coral and seaweed (Haddad et al., 2009). It is known as stinging and causing mild irritation in humans (Websource 3).

3. Discussion

Cnidaria, with approximately 13,000 living species, are the largest phylum of toxic animals (Turk and Kem, 2009). The name of the genus comes from the Greek word “cnidos”, meaning nettle and as the name implies, they are armed with a venomous cell, named cnidocyte (Fautin, 2009). Cnidocyst toxins can induce a wide variety of local and systemic reactions (Rifkin et al., 1996). Any cnidarian species is a potential stinger for humans and the number of known venomous species for humans is still low (Marques et al., 2002). While there is a large body of data in the literature from studies at molecular and cellular levels, there is limited data about the in vivo effects of cnidaria toxins (Suput, 2009).

Most of the cnidarian envenomations result in local tissue reactions like erythema, edema, necrosis, piloerection, and localized lymphadenopathy. Long term

Table 1
Treatment details.

Patient number:	Lesions:	Urgent treatment	Prescription
1	Gluteal (bilateral)	Pheniramine maleate 45,5 mg iv Ranitidine 50 mg iv Pain relieving gel	Dimentidine maleate gel Cetirizine 10 mg tb Fexofenadine 120 mg tb
2	Gluteal (bilateral)	Pheniramine maleate 45,5 mg iv Ranitidine 50 mg iv Dexamethasone 8 mg iv	Dimentidine maleate gel Cetirizine 10 mg tb Fexofenadine 120 mg tb
3	Abdominal and upper leg	Dimetidine maleate gel Hydrocortisone cream Levocetirizine tb	Dimetidine maleate gel Hydrocortisone cream Levocetirizine 5 mg tb
4	Abdominal	Dimetidine maleate gel Hydrocortisone cream Pain relieving gel Hydroxyzine susp.	Dimetidine maleate gel Hydrocortisone cream Pain relieving gel Hydroxyzine susp.
5	Abdominal	Pheniramine maleate 45,5 mg iv Ranitidine 50 mg iv Dexamethasone 8 mg iv Pain relieving gel	Dimetidine maleate gel Hydrocortisone cream Cetirizine 10 mg tb Fexofenadine 120 mg tb
6	Axillar	Pheniramine maleate 45,5 mg iv Methylprednisolone 40 mg iv Ranitidine 50 mg iv Pain relieving gel	Dimetidine maleate gel Cetirizine 10 mg tb Fexofenadine 180 mg tb
7	Axillar	Pheniramine maleate 45,5 mg iv Ranitidine 50 mg iv Tenoxicam 20 mg iv Pain relieving gel	Dimetidine maleate gel Cetirizine 10 mg tb Fexofenadine 180 mg tb
8	Axillar, multipl back lesions	Pheniramine maleate 45,5 mg iv Methylprednisolone 40 mg iv Ranitidine 50 mg iv Pain relieving gel Tenoxicam 20 mg iv	Dimetidine maleate gel Cetirizine 10 mg tb Fexofenadine 180 mg tb Hydrocortisone cream
9	Neck	Pheniramine maleate 45,5 mg iv Methylprednisolone 40 mg iv Ranitidine 50 mg iv Pain relieving gel Tramadol hydrochloride 50 mg iv	Dimetidine maleate gel Levocetirizine 5 mg tb Fexofenadine 180 mg tb Hydrocortisone cream

reactions are keloid formation, fat atrophy, hyperpigmentation, gangrene, and vascular spasm. Systemic effects are less often and fatal reactions are rare (Haddad et al., 2009).

Contact with a feather hydroid induces instantaneous burning, itching and urticaria. A second variety of envenomation causes delayed popular, hemorrhagic, or zosteriform reaction 4–12 h after the contact. Rarely, erythema multiforme or a desquamative eruption may develop (Auerbach, 2011). For pain control, cold application is reported to be effective (Exton et al., 1989). And there is a recent report from Australia showing that hot application is more effective than cold application for the treatment of *Physalia* sp. (Loten et al., 2006). Parenteral analgesics or narcotics may be needed to control severe pain in stable victims (Burnett, 2009). Haddad et al. recommends topical steroids for the therapy of the late allergic manifestations, antibiotics for ulcerated lesions, and anti histamines for pruritus.

Pennaria genus is not well known for the medical threats they might present. To our knowledge, this is the first case report attributed to *P. disticha*.

The cause of the contact dermatitis is not always apparent, especially when the contact takes place in an unfamiliar environment. This is especially true for marine intoxications. The research, diagnosis, and isolation of the causative agent can be challenging.

- 1 The *P. disticha* and other benthic hydroids should be kept in mind for differential diagnosis of contact dermatitis following contact with marine environment.
- 2 The long-term presence of several mediums like rope in water can create a hospitable environment for benthic hydrozoa fouling.
- 3 The board of directors of the facility mentioned before took several preventing measures according to the feedback of the authors of this paper.

Acknowledgments

The authors wish to acknowledge the aid and assistance of Mr. Levent Artüz in the identification of causative organism, *P. disticha*.

Conflict of interest statement

The authors declare that there are no conflicts of interest.

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