

Contact reactions to the jellyfish *Carybdea marsupialis*: observation of 40 cases

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The clinical characteristics of 40 patients seen in an accident and emergency department after contact with jellyfish while bathing in the sea are described.

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Carybdea marsupialis is a cubomedusa of the Scyphozoa class, with a tall cubic, transparent umbrella and 4 tentacles (1), first observed in the Adriatic Sea by Claus in 1878 (2) and reappearing only as recently as 1985 (3) in very few specimens. An exhaustive study of the various parameters of *Carybdea marsupialis* was carried out in 1991 by the Biology Department of Trieste University and the Sea Research Centre of Cesenatico, after the recent observation of its massive presence in the Northern Adriatic (4). *Carybdea marsupialis* was considered an innocuous jellyfish until 1992, when cases of dermatitis due to contact with it were recorded in bathers in Cesenatico (5).

The urticant apparatus of *Carybdea marsupialis* consists of cnidoblasts, specialized cells that contain the nematocyst, a vesicle full of urticant liquid in which a hollow, very thin filament is coiled. A sensory termination, the cnidocil, is in contact with the external environment and, when stimulated, causes contraction of the cell, resulting in the rapid evagination of the urticant filament and the emptying of the nematocyst (9). The nematocysts expel their filaments with such force that they penetrate the superficial dermis, where the viscous venom adhering to the filament is spread.

The urticant liquid is a mixture of polypeptides and enzymes, of which tetramine, histamine and 5-hydroxytryptamine contribute to the cutaneous effects of burning sensation, erythema and oedema, whereas the toxic effects are linked to the proteinaceous substances, for some of which the amino-acid chain has been identified (10). Import-

ance for quinine-sulphate-like mediators in the genesis of the painful symptomatology has also been propounded (11). Histological examination of acute lesions reveals an irritant pathogenesis, in as much as it shows spongiosis and a lymphocytic infiltrate in the superficial dermis. Nematocysts in the epidermis are also visible (9).

Patients, Methods and Results

Between 18 July and 15 September 1994, 40 patients, 23 female and 17 male, aged between 7 and 50 years, were admitted to the Accident and Emergency Department of San Giorgio Hospital in Cervia complaining of pain and burning sensation, due to cutaneous urticarial-like manifestations that had appeared while bathing off Cervia and Milano Marittima beaches. 10 patients said that they had immediately applied ammonia packs, but had still had to go promptly to the Accident and Emergency Department because no resolution of the symptomatology was apparent. On examination, all patients showed linear erythematous weals, whose length varied from a few up to 20 cm, localized mainly on the trunk and limbs, without tentacles adhering to the skin. The only symptoms reported were an intense burning sensation and pain, never itching. No systemic symptomatology was found in any patient.

The clinical and anamnestic suspicion of dermatitis due to contact with jellyfish was confirmed by the observation of several specimens of *Carybdea marsupialis* in the part of the Adriatic Sea men-

Table 1. Follow up of patients contacted by phone

Contact type	No. patients	Resolution after 2 weeks	Resolution after 3 months	Scar result (not keloid)	Keloid scar
intense and long	8	0	0	7	1
brief	30	30	—	—	—

tioned, by the *Unità Operativa Daphne* of the Sea Research Centre of Cesenatico: in its bulletin, the researchers confirm that in the period July-August 1994, there were only jellyfish of the *Carybdea marsupialis* species (14).

The first 8 cases were treated according to first aid manuals (6, 7): the injured part was soaked in warm salty water to deactivate the toxins, which are thermolabile, until resolution of symptoms was obtained, a result achieved in all patients in about 30 min. Consultation of other textbooks citing the use of vinegar to inhibit discharge of nematocysts in various species of jellyfishes, *Carybdea marsupialis* included, (8–9), led us to apply a vinegar pack to the next 20 patients for 15 min. This treatment resulted in disappearance of symptoms in 20% of patients and in their improvement in 80% of patients. We have achieved the same result using alcohol instead of vinegar (8).

Since the cutaneous manifestations still persisted on discharge from the Casualty and Emergency Department, it was decided to make another clinical check-up after 24 h: at this 2nd examination objective or subjective manifestations due to previous contact with *Carybdea marsupialis* were still present, though mitigated, in all patients. Therefore, a topical corticosteroid was prescribed to reduce inflammation. After this examination, no patient returned for a check-up.

After 3 months, we telephoned 38 patients out of the 40, to assess development of clinical manifestations and the possible appearance of delayed reactions. As the follow-up suggested (Table 1), the

8 patients who had had more intense and longer contact with this jellyfish still showed cutaneous manifestations for 1 or 2 weeks, which they reported to be similar to a burn in its evolutionary phase (swelling, soreness and burning sensation). When contacted by telephone, these patients still complained of the presence of red-violet scars. One of these patients was advised to have a 2nd examination, since he reported having a large scar exactly at the site of previous contact with the jellyfish. From his case history, it emerged that at first, he had treated the injury with a direct ammonia application. Clinical examination revealed a keloid (Fig. 1). Some authors have previously described keloids as a long-term reaction (12). The 30 patients who had had brief contact with *Carybdea marsupialis* saw resolution of the cutaneous lesions and symptoms within a week; there were no scars apparent at the time of the interview.

Discussion

The subject cases of our study show that contact with the jellyfish *Carybdea marsupialis* causes cutaneous reactions characterized by erythematous linear weals, accompanied by intense burning sensations and pain, which are irritant rather than allergic, since all patients had never had any previous contact with jellyfish or coelenterates. No generalized symptomatology was noted in the cases examined.

The treatments followed, based on warm water, vinegar or alcohol, proved to be equally effective in relieving the initial painful symptoms. On the other hand, the use of substances usually employed as first aid by seaside employees (such as ammonia) was ineffective: among the 10 patients treated with ammonia, 9 showed no improvement and 1 developed a keloid scar at the site of application.

The non-serious nature of the lesions examined leads to the conclusion that *Carybdea marsupialis*, like other jellyfish in the Adriatic Sea (13), has a toxicity that is local, variable and proportional to the time and intensity of contact.

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Fig. 1.

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