

## Skin and Systemic Manifestations of Jellyfish Stings in Iraqi Fishermen

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### Abstract

**Background:** Jellyfish stings are common worldwide with an estimated 150 million cases annually, and their stings cause a wide range of clinical manifestations from skin inflammation to cardiovascular and respiratory collapse. No studies on jellyfish stings have been carried out in Basra, Iraq. **Objectives:** To describe the immediate and delayed skin reactions to White Jellyfish (*Rhizostoma* sp.) stings and the types of local treatment used by fishermen. **Methods and Materials:** 150 fishermen were enrolled at three Marine stations in Basra, Iraq. Demographic data, types of skin reactions, systemic manifestations and kinds of treatments were collected. **Results:** Overall, 79% of fishermen in all three Marine stations gave a history of having been stung. The common sites of stings were the hands and arms followed by the legs. Most fishermen claimed that stings led to skin reactions within 5 minutes. The presenting complaints were itching, burning sensation, and erythematous wheals. A few days after the sting, new groups of painless and itchy erythematous monomorphic papular rashes developed at the site of the sting in 62% of cases as a delayed type of skin reaction that resolved spontaneously. The local remedies commonly used by the fishermen were seawater, tap water and ice. A few fishermen considered stings as insignificant and did not think there was a need to seek medical help. **Conclusions:** We conclude that jellyfish causes many stings among fishermen in the Basra region. Their stings lead to immediate and delayed skin reactions. Self-treatment by topical remedies is common.

Key words: *Contact dermatitis, Rhizostoma, Fishermen, Jellyfish stings, Iraq*

### Introduction

Venomous marine creatures are a well-recognized hazard for those working and swimming in the tropical Pacific Ocean. The incidence of envenomation from marine creatures' bites and stings appears to be rising due to increasing marine activities of local populations and tourists [1,2], and those who are involved in water activities such as swimming, sailing, and saltwater fishing, are more likely to get stung. Fortunately, most jellyfish stings are not severe. Immediate skin reactions include local erythema, pain, pruritus, parasthesias, blistering, and swelling [3,4]. Delayed skin reactions may occur within few days and mainly present as pruritic papules [5, 6] with histological findings similar to those of allergic contact dermatitis [7]. Systemic reactions are usually associated with exposure to a large amount of the toxin and are usually limited to nausea, headache, and chills but may lead to a major anaphylactic reaction [8-10].



Figure 1 *Rhizostoma* species

Most jellyfish stings are self limiting, and they are commonly treated by topical application of normal saline, seawater, tap water, 5% acetic acid (house vinegar), or

crushed ice. Jellyfish stings can also be treated with antihistamines and topical corticosteroids. Recently, topical sting inhibitors have been used to prevent jellyfish stings [11-13].

The type of jellyfish common in Basra is white Jellyfish (*Rhizostoma* sp) (Figure 1). It has a white translucent umbrella and eight oral arms. Its common local names are Thaklol, Zaklol, and White jellyfish [14]. Because no study has been carried out in the Basra region, we investigated the clinical presentations and managements of jellyfish stings in this area.



Figure 2 12 hours after the exposure to jelly

### Methods and materials

One hundred and fifty five fishermen were enrolled in this cross sectional study from three Marine stations in Basra. They were from Al-Fao (n=70), Khour Abid Allah (n=45) and Um-Kasser (n=35). All were males and their ages ranged between 24 and 45 years (mean of 33.6 ± 6.5 years). The study was conducted over a six-month period. We developed a structured questionnaire and used it to collect the data during interviews. The questionnaire

that included questions on the history of jellyfish stings, the type of skin reactions, any systemic involvement, the time of onset of reactions, the progression of the reactions, the methods of treatments used by the fishermen, and any hospitalization. Data were analyzed by calculating percentages.

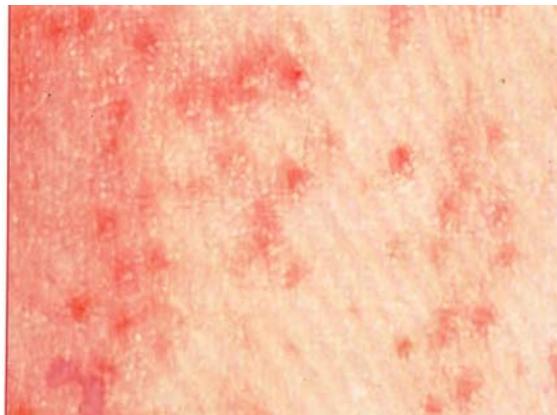


Figure 3 4 days after the exposure to jelly fish stings.

### Results

Overall, 78.7% of the fishermen gave a history of jellyfish stings during the three months preceding the interview. There was no significant difference between the three stations (Table 1). The common sites of stings were the hands and arms (65.4%) followed by the legs (29.9%). Other parts of the body were also attacked, such as the abdomen, eyes and back (Table 2). Most fishermen (95.2%) claimed that stinging led to skin reactions within 5 minutes. The presenting complaints were pain (89%), itching (68%), burning sensation (45%), and erythematous wheals (90.5%) (Figure 2). Fainting was reported by 3% of the fishermen. About three days after the sting, painless but itchy erythematous monomorphic papular rashes (Figures 3 and 4) developed at the sites of the stings in 62% of the fishermen as a delayed type of skin reaction that resolved spontaneously in most cases (Table 3).



Figure 4 7 days after the exposure to the stings.

The most common types of local remedies used by the fishermen were seawater (53.3%), tap water (35.4%), and ice cubes (5.4%). About 5.9% of the fishermen considered stings as insignificant and did not feel a need to seek medical help (Table 4).

Table 1 Local names of the jellyfish and percentage of stings among fishermen in the three stations

Stations	Local names of the jellyfish	Number of fishermen studied	Number of fishermen stung	Percent Stungs
Al -Fao	Thaklol	70	60	85.7
Khour Abid Allah	Zaklol	45	30	66.6
Um -Kasser	Zaklol	35	28	80
Total	-	150	118	78.7

Table 2 Distribution of sites of stings among fishermen in three stations

Stations	Number of stings	Percentages of different parts of the body stung		
		Hands and arms	Legs	Others
Al -Fao	60	68.3	28.3	3.4
Khour Abid Allah	30	70.7	25.7	3.6
Um-Kasser	28	57.1	35.7	7.2
Total	118	65.4	29.9	4.7

Table 3 Clinical features of immediate and delayed skin reactions to jelly fish stings

Signs and Symptoms	Immediate reactions	Delayed reactions
Onset	Within 5 minutes	After 72 hours
Frequency	In 95.2% of cases	In 62% of cases
Pain	Very painful in 89%	Painless in 92%
Itching	Severe in 68%	Mild in 61%
Burning sensation	Severe in 45%	Mild in most cases
Rashes	Monomorphic papular in 90.5%	Monomorphic papular in 89.3%
Fainting	Some cases 3%	None
Course	Disappeared in 48 hours	May last a few weeks

### Discussion

Jellyfish are marine invertebrates belonging to the class Scyphozoa of the phylum Cnidaria. They can be found in oceans and fresh water as well. The term "jellyfish" is misleading because scyphozoans are not fish [1,5]. They have tentacles covered with cells (cnidocytes) that are used to sting and kill their prey or for defense. The venom is located in nematocysts and consists of catecholamines, histamine, hyaluronidase, fibrolyns, kinins, phospholipases, and various haemolytic, cardiotoxic, and dermatonecrotic toxins [1,6].

Fishermen are frequently exposed to jellyfish stings, especially in summer. During fishing, most white jellyfish die but remain attached to the fishing nets. Therefore, fishermen may try to remove them, which might explain the high percentage of fishermen (78.7%) who have been stung by jellyfish.

**Table 4** Distribution of cases according to type of treatment

Station	No of stings	Percentages of the types of treatments used by fishermen *			
		Seawater	Tap water	Ice pieces	None
Al -Fao	60	50.7	38.3	5.0	6.0
Khour Abid Allah	30	56.0	35.0	4.3	4.7
Um -Kasser	28	53.1	32.9	7.0	7.0
Total	118	53.3	35.4	5.4	5.9

The study showed that white jellyfish stings can cause an immediate local skin reaction in the form of wheals in 90.5% of stings, which is in agreement with other studies [3,4]. Delayed cutaneous hypersensitivity reactions were also common (62%) and appeared three days after the sting as itchy, erythematous, painless, monomorphic papular rashes. Other studies reported that it occurred after five days or more as pruritic, painless rashes [17,18]. Noteworthy, some authors described fatal or near-fatal stings with mortality rates up to 20% [9,19,20]. However, we did not hear of any hospitalization or fatality among fishermen during our survey.

Current guidelines from the Australian Resuscitation Council (ARC) still recommend using ice for most jellyfish stings, although there is a little evidence to support its efficacy. There is more evidence supporting the use of hot water [23,24]. The ARC gives advice for tropical and non-tropical stings, recommending vinegar for tropical jellyfish stings and cold packs or wrapped ice for pain relief. Vinegar has been shown to prevent undischarged nematocysts from firing. The use of vinegar is recommended, and it is routinely used for first aid treatment. There are minimal data on the effect of pressure immobilization bandages on jellyfish envenomation [25].

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