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Jellyfish sting: A case report

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Abstract

Jellyfish stings are frequently reported marine animal envenomation worldwide. Jellyfish stings in the coastal regions of India are a major public health hazard. Jellyfish stings are known to produce mild to severe toxic effect based on the type of species. There is no specific data from India, but very few cases are reported from the coastal regions. The investigators report a case of jellyfish sting to a nine-year-old child from the coastal area of Udupi district, Karnataka.

Key words: Cnidarian, India, jellyfish sting, Karnataka

Introduction

Jellyfish is an aquatic invertebrate that has stingers on the ends of its tentacles and they float in salt water. The tentacles are long that can inject venom, a proteinaceous toxin, from thousands of microscopic barbed stingers. They sting when they come in contact with human beings and are toxic to health. The toxic venom can cause superficial symptoms on the skin as well as systemic symptoms in general. They belong to the phylum Cnidarian group. Jellyfish captures the prey by injecting venomous capsules called nematocysts, which are clustered along the jellyfish's tentacles. The process to discharge the nematocysts takes only a few microseconds (Kan et al., 2016).

Jellyfish envenomation is reported in warm and cold coastal regions worldwide and can lead to several consequences. There are more than 100 species of jellyfish known to be dangerous to humans. The treatment of the stings depends on the size and type of the jellyfish and the individual response of the patient (Cegolon, Heymann, Lange & Mastrangelo, 2013). In this paper, we have reported a case from the coastal region of Karnataka to reiterate the hazards of the jellyfish sting.

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Case report

A nine-year-old female child was brought to the paediatric emergency department of Kasturba Hospital, with the history of being stung by a jellyfish on the left inner region of the thigh while getting into a boat in one of the tourist spots along the coast of the Arabian Sea at Malpe, Udupi.

After being stung, the child had an intense pain at the site and a burning sensation within a few seconds of contact. She also developed erythematous lesions/itchy rashes localized to the area of the sting and urticaria after a few minutes. The stung area was cleansed with water. The child panicked after the sting and complained of abdominal pain. She was then brought to the hospital within an hour of being stung and was later admitted at the emergency department.

On admission, she had pain and erythematous lesions over the contact site of the sting. There was no history of fever, bleeding, loss of consciousness, facial puffiness, breathlessness, cough, vomiting, diarrhea or other systemic symptoms. Her blood pressure was 94/60 mmHg and her pulse rate was 86/minute. Oxygen saturation, SpO2 reading in the right upper limp was 98%, the right lower limp was 100%, the left upper limp was 99%, and the left lower limp was 100%. The height was 139 cm, the weight 31.3 kg and the BMI was 16.1 (between 15th to 50th percentiles).

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Musculoskeletal system assessment revealed tenderness in the left lower thigh. Erythematous, tender skin lesion was present in the left inner aspect of the thigh. Tentacle prints were seen on examination of the skin. She was not anaemic, not icteric, and there was no cyanosis. The systemic evaluation was unremarkable.

She was hospitalized and treated with topical anti-pruritic lotions, analgesics, and antihistamines. She was discharged after two days with oral antihistamines and anti-pruritic lotions. On discharge, the vitals were stable. She had pruritus in the left thigh during discharge, which lasted for a month and later subsided.

Discussion

The Indian subcontinent has a long coastal line of 8,000 km with a rich biodiversity. The Indian main coastal segments include the west coast along the Arabian Sea and the east coast along the Bay of Bengal. The coastal ecosystems are highly disturbed and are threatened by the pollution due to the industrial and agricultural waste. There are dangerous and venomous marine animals habitat in the coastal regions (Venkataraman, Raghunathan, Sreeraj & Raghuraman, 2012).

In recent years, the environmental factors such as variations in climate, warm temperature, and salinity have shown greater abundance of jellyfish populations in the coastal regions (Purcell, 2005).

Jellyfish is occasionally known to sting people using stinging structures called nematocysts. The contact of a human with the tentacle of a jellyfish could trigger millions of nematocysts to inject venom into the skin, which can cause adverse reactions in the human. The nutrients are absorbed using the gastro-dermal lining of the gastro-vascular cavity (Venkataraman et al., 2012).

Jellyfish venom is a mixture of toxic and antigenic polypeptide, causing local and systemic reactions in humans (Friedel, Scolnik, Adir & Glatstein, 2016). Jellyfish stings cause local pain instantly for about 30 minutes, whereas the residual pain would last for several days. Encrusted lesions and post inflammatory darkly pigmented skin may be visible from few days to two weeks. At the onset of envenomation, heart rate becomes rapid and the blood pressure increases. Gradually, in due course of time, the heart rate slows down and may go into shock. The skin shows beaded or ladder pattern of red, purple or brown whiplash lesions which show the pattern of nematocysts on the tentacles. The skin lesions subsequently develop into ulcers over several days and the tissue necrosis heals slowly over several months, leaving residual pigmentation and scarring (Venkataraman et al., 2012).

The first aid management of the jellyfish sting includes immediate rescuing of the victim from the water to avoid further contact. Reassure the victim and advice not to rub over the stung area, as it can increase the discharge of the nematocysts on the victim's skin. The undischarged nematocysts can be deactivated by washing tentacles off the affected areas with seawater, salt water or vinegar for 15 to 30 minutes, and the removal of residual tentacle pieces can be done using plastic cards. Hot water immersion has shown to provide relief from mild to moderate pain from the sting (Bais, Jiang, Xu, Che & Xiao, 2017). Conversely, fresh water, alcohol, methylated spirits, and pressure bandage should not be applied as first aid, as this can induce the discharge of nematocyst by osmosis (Cegolon, Heymann, Lange & Mastrangelo, 2013). However, current treatments show a variable response, with conflicting results between studies and species, which contribute to a considerable amount of confusion about the treatments (Ward, Darracq, Tomaszewski & Clark, 2012). The management should focus on preserving life and resuscitation measures including management of airway, breathing, and circulation (Friedel, Scolnik, Adir & Glatstein, 2016).

Jellyfish envenomation is an emerging environmental health issue, which represents a threat to the people living in the coastal regions and to tourists (Donno, et al., 2014). Environmental changes have indirect effects on the jellyfish population through the food web. Temperature and salinity can affect the physiological process of the jellyfish in accelerating their metabolism and reproduction (Purcell, 2005). Prevention of jellyfish stings is achieved by not coming in contact with areas in the sea that are infested by jellyfish. Wearing protective clothing and goggles is advised while going underwater. Health information about water safety should incorporate information related to jellyfish stings (Deo & Unni, 2016). There is an extensive concern that the ocean may be increasingly dominated by jellyfish due to the rapid increase in the rate and their ability to adapt to new conditions of the ecosystem. The closure of a beach at the time of

high density jellyfish swarms is warranted. Signboards creating awareness regarding the presence of jellyfish in the beaches could prevent such incidences. Capacity building on the first aid and management of jellyfish sting in the local coastal residents and managers will help reduce the impact of jellyfish stings and save lives.

Conclusion

Information about jellyfish is therefore important to prevent jellyfish impacts and adopt preventive measures. Appropriate measures to prevent jellyfish proliferation in the coastal regions is crucial in the future years to prevent the health hazards and to promote seaside leisure activities.

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