CASE REPORT

Coral Reef Injury : Case report

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Case Report
A 25 years old previously healthy male presented with erythema, pain, swelling and itching over his right knee, anterior thigh and groin. A week back he had cut his right knee against a coral reef while swimming in the ocean off the coast of Thailand. There was a break in the skin as it bled and scabbed over (Fig. 1). He felt slightly feverish but the temperature was not documented. He had consumed alcohol before and after the injury on holiday, but no shellfish. Apart from the extensively spreading erythema of skin, there were no signs of inflammation of deep tissues or joint. Total white blood cell count was 9660/cm^3 initially, with 60% polymorphs, eosinophils of 8%. Total white blood cell count rose to 12.4/cm^3, and C-reactive protein was 12.95 mg/dl. Other routine hematology and chemistry values were normal.

He received a single injection of cefperazone /sulbactem and oral doxycycline for 3 days, followed by oral clindamycin, ibuprofen and antihistamine for one week. He improved progressively and the pain and erythema resolved at the end of two weeks.

Fig. 1. Right knee coral reef injury (with permission of patient)

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Discussion
Coral reefs are dense coral colonies held together by a calcium carbonate skeleton forming diverse underwater ecosystems. Corals are small marine animals belonging to the class *Anthozoa*, phylum *cnidarian*. The individual colonies are called polyps, residing in the seabed.[1] Each polyp has a soft cylindrical body crowned by an oral disc with a bunch of tentacles that secrete a hard, protective exoskeleton of calcium carbonate. Polyps reproduce by budding, but remain attached to each other, forming a compact multi polyp colony with a common skeleton, which may be several meters in diameter.

Recreational water sports are increasingly the cause of coral reef injuries which may have myriad cutaneous manifestations, ranging from mild localized erythema to life threatening necrotizing fasciitis with septicaemia.[2,3]

Some species of coral e.g the fire coral, sting causing mild pain, pruritis, erythematous rash or urticaria, lasting a few days. The sting is due to venomous coral capsules called nematocysts.[4] The pain is toxin related and can easily be controlled by immersion of affected area in hot water to tolerance.[1] In addition, hydroids, sea anemones and some sponges commonly found in shallow reef beds can also sting, causing minor allergic manifestations. Sea urchins are common reef inhabitants that injure divers by embedding their spine under the skin, leading to local inflammation and irritation until it is removed.

In contrast, lacerations from accidental brush up against a rough coral surface are prone to secondary bacterial infection. The resulting soft tissue infection usually presents in a few days, and may cause cellulitis, lymphangitis or ulceration, and is frequently polymicrobial[5] with skin flora like *Streptococci, S aureus, S epidermidis, Bacillus spp, Propionibacterium acnes, Acinetobacter calcoaceticus* and *Corynebacterium spp* being the most common bacterial isolates. Other virulent water borne pathogens seen in traumatic marine injuries are predominantly facultative gram negatives like *Vibrio* spp, *Aeromonas* spp, *Pseudomonas* spp, coliforms such as *Escherichia Coli* and *Enterobacter cloacae, Bacteroides spp, Chromobacterium violaceum and Salmonella spp.*[5,6] *Erysipelothrix rhusiopathiae,*

Mycobacterium marinum,[4] and occasionally *M fortuitum*[1] are also capable of causing localized skin infection.

Management of reef associated laceration includes thorough wound cleansing with saline, removal of foreign bodies e.g bits of coral, debridement of devitalized tissue, antibiotics to cover all possible marine pathogens, immersion in hot water to tolerance (43-46C) and analgesics.[7] A close follow up is required because of the risk of serious infection.

The most serious infection following coral cut is salt water necrotising fasciitis after wound contamination with vibrio spp which include the halophilic *V. parahemolyticus*, *V. vulnificus*, *V. alginolyticus*, *V. fluvialis*, *V. hollisae*, *V. damsela*, *V. furnissii*, *V. metschnikovii*, and *V. cincinnatiensis*.[8] Among them, the epidemiology and virulence of *V. vulnificus*, which is a common cause of invasive human diseases, are well described.[9] Specific conditions making patients susceptible to Vibrio infections include alcoholism, cirrhosis, oral steroid therapy, polycystic kidney disease, leukopenia, hemochromatosis and multiple myeloma[6] Likewise, age, male sex, chronic renal failure, diabetes, peripheral vascular disease and drug abuse also increase the risk of a life threatening infection.[10]

Necrotizing fasciitis is characterized by extensive and progressive necrosis of the skin and fascia with sepsis, requiring expedient diagnosis and aggressive treatment with broad-spectrum antibiotics and surgical debridement. The lesions are extremely painful, dusky, tense and swollen, with frequent haemorrhagic bullae and crepitus. A high index of suspicion must be maintained with cases of severe and advancing cellulitis to prevent multi organ failure and death.[2]

Conclusion

Coral infections associated with marine activities in salt water, particularly related to work or recreation, present unique diagnostic challenges for the infectious disease practitioner. The clinician must be alert to these types of injuries, most of which are mild, needing only local wound care; however, some may lead to life threatening infections. Our patient was young and previously healthy. He was probably stung by a fire coral that did not cause systemic or serious consequences. Hence his recovery was rapid and uncomplicated.

References

1. Palmanovich E, Brin YS, Laver L, Kish B, Nyska M. Pedal coral injury: A case report. The Foot. 2013;23(1):50-2.
2. Byrne A-M, Sullivan P, Keogh P. Saltwater nectotizing fasciitis following coral reef laceration possibly exacerbated by a long-haul flight: a case report. Cases journal. 2009;2(1):9102.
3. Brown CK, Shepherd S. Marine trauma, envenomations, and intoxications. Emergency medicine clinics of North America. 1992;10(2):385-408.
4. Ciampi MA, Sofair AN. The Chief Resident Presenting with a Coral Cut Injury.
5. Pien FD, Ang KS, Nakashima NT, Evans DG, Grote JA, Hefley ML, et al. Bacterial flora of marine penetrating injuries. Diagnostic microbiology and infectious disease. 1983;1(3):229-32.
6. Gomez JM, Fajardo R, Patiño JF, Arias CA. Necrotizing fasciitis due to Vibrio alginolyticus in an immunocompetent patient. Journal of clinical microbiology. 2003;41(7):3427-9.
7. Adelaide N, Australia S. Envenomations: an overview of clinical toxinology for the primary care physician. 2009.
8. Lee D-Y, Moon S-Y, Lee S-O, Yang H-Y, Lee H-J, Lee MS. Septic shock due to Vibrio alginolyticus in a cirrhotic patient: the first case in Korea. Yonsei medical journal. 2008;49(2):329-32.
9. Neill M, Carpenter C. Other pathogenic vibrios. Mandell, Douglas and Bennett's: Principies and Practice of Infectious Diseases. 2000;6:2544-6.
10. Elliott DC, Kufera JA, Myers RA. Necrotizing soft tissue infections. Risk factors for mortality and strategies for management. Annals of surgery. 1996;224(5):672.