

Coral and Marine Cuts

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Infections from the sea may be from coral cuts and abrasions, or venomous or non-venomous animal spine penetration and exposure to sea or fresh water. The infecting organisms can be either human skin bacteria or specific fish or marine or fresh/brackish water bacteria. The specific bacteria live in various environments, often including the mucous layer of the skin of fish. Most of the zoonotic bacteria are also fish pathogens. Bacterial populations and risk of infection to both fish and humans are increased by pollution in waterways/estuaries. Specialised laboratory culture techniques should be requested if specific pathogens are suspected.

The common human skin pathogens are *Streptococcus pyogenes* (especially common in tropical areas, e.g. northern Australia) and *Staphylococcus aureus*.

Important specific pathogens include

- *Aeromonas* species – fresh or brackish water – may progress to myositis or sepsis with metastatic complications (especially if underlying systemic illness)
- *Vibrio vulnificus*, *V. alginolyticus*, *V. parahaemolyticus* and other non-cholera vibrios – salt or brackish water – may progress to blistering cellulitis, myositis and fulminant septicaemia (especially if underlying liver disease or diabetes)
- *Mycobacterium marinum* – especially fish tanks but also swimming pools – nodular lesion(s), can spread locally or occasionally disseminate in immunocompromised people – other *Mycobacteria* occasionally occur also
- *Edwardsiella tarda* – e.g. fish spine puncture – may progress to osteomyelitis, septic arthritis, meningitis and septicaemia (especially if underlying illness such as cirrhosis, iron overload)
- *Erysipelothrix rhusiopathiae* – from many fish – specific-looking local lesion ('fish rose'), sometimes diffuse cellulitis but occasionally endocarditis and septicaemia with high mortality (especially if underlying illness)
- *Streptococcus iniae* – especially with aquaculture, both saltwater and freshwater, (e.g. farmed barramundi) – cellulitis may progress to arthritis, endocarditis, meningitis and septicaemia

Management

- Initial first aid is especially important – vigorous cleaning of wound. Scrubbing with brush also important if coral cuts or abrasions. There does not appear to be any evidence to suggest using an antiseptic agent to scrub the wound is better than using saline.

- Appropriate cultures if established infection on presentation – notify laboratory of ‘?marine pathogen’.
- **For mild infections:**
 - i. A mild/early cellulitis is likely to be *S. pyogenes* which can be treated with penicillin. IM procaine penicillin would be appropriate as is recommended for non-marine infections. Other organisms can cause cellulitis (including *S. aureus*) so it is important to review the response to treatment.
 - ii. If there is a boil, then *S. aureus* should be suspected and treatment should be with flucloxacillin or dicloxacillin. Some clinicians use cotrimoxazole for mild marine infections.
 - iii. If it is not responding to treatment within 48 hours, suspect a non-sensitive organism, and do cultures if possible.
- For more severe infections the specific marine pathogens may need to be covered by initial therapy (before laboratory identification of the organism), in addition to covering *S. pyogenes* and *S. aureus*. This is complicated. The drug of choice for *Aeromonas* species is ceftriaxone/cefotaxime or ciprofloxacin. The drug of choice for *Vibrio* species is doxycycline, but ciprofloxacin also works. Therefore, a reasonable empirical regimen for more severe infections is ceftriaxone plus doxycycline. An alternative combination for critically ill patients is meropenem/imipenem plus ciprofloxacin.

References

1. Antibiotic Guidelines Version 11, 2000; 181-2.
2. Lehane L & Rawlin GT. Topically acquired bacterial zoonoses from fish: a review. *Med J Aust* 2000; 173:256-259.