Marine Envenomation and Poisoning
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Marine Envenomation
- Increased incidence
- Provoked attacks
- Temperate/tropical waters

Traumatic Injuries
Envenomations
Toxic Ingestions

Coral
- Razor sharp skeleton

Presentation
- Pruritic/red welts
- Cellulitis
- Ulceration
- Necrosis
Management

- Clean site
- Vigorous irrigation
- Hydrogen Peroxide
- Wet-to-dry dressing
- Tetanus

Sea Urchins

- Beaches, reefs, ocean bottom
- Hard shell
- Spines
- Triple-jawed pedicellariae
Presentation
- Burning pain
- Myalgias
- Erythema
- Swelling
- Purple discoloration
- Granuloma
- Systemic symptoms

Management
- Hot water
- Remove foreign bodies
- Vigorous irrigation
- Soft tissue x-rays
- Surgery
- Tetanus

Nematocysts
- Near mouth
- Outer surface of tentacles
- Venom
Hydrozoans
- Portuguese man-of-war
- Fire coral

Schyphozoans
- Box-jelly fish
- Sea wasp
- Chesapeake Bay sea nettle
- Giant lions mane jelly fish
- Mauve stinger
Severity of Envenomation

- Species
- Type of nematocyst
- Number of nemotocysts
- Age and health of victim
- Previous sensitization

Mild Envenomation
- Tentacle prints
- Stinging
- Burning
- Pruritis

Moderate Envenomation
- Local edema
- Desquamation
- Hemorrhage
- Necrosis
- Ulceration

Severe Envenomation
- Gastrointestinal
- Neurologic
- Cardiovascular
- Respiratory
- Musculoskeletal
Management
- Rinse with sea water
- 5% acetic acid
- 40% isopropyl alcohol
- Hot water to tolerance?
- Baking soda
- Double glove/forceps

Management
- Shave
- Acetic acid
- Tetanus
- HC cream 1%
- Analgesics
- Safe Sea

Irukandji Syndrome
- Carybdeid species
- Delayed severe systemic symptoms
- Pain
- Catecholamine-like effects
- Cardiopulmonary decompensation
- Supportive treatment
Stingrays
- Most common marine vertebrate
- 7 species in Atlantic
- 4 species in Pacific
- Venomous spine on dorsum of caudal appendage

INTEGUMENTARY SHEATH

CAUDAL APPENDAGE

SPINE

CAUDAL FIN

CUNEIFORM AREA
Presentation
- Intense pain within 10 min
- Peaks 30 to 60 min
- Duration up to 48 hours
- Edema
- Bleeding
- Cellulitis
- Necrosis

Systemic Symptoms
- Neurologic
- Gastrointestinal
- Cardiovascular
- Musculoskeletal

Management
- Vigorous irrigation
- Hot water
- Explore/debride wound
- Soft tissue x-rays

Management
- Pack open
- Close loosely
- Tetanus
- Prophylactic antibiotics
- Recheck in 24 to 48h

Catfish
- Fresh water
- Salt water
- Dorsal fin spines
- Pectoral fin spines
- Venom
Presentation

- Immediate intense pain
- Radiation
- Swelling
- Erythema
- Ischemia

Management

- Vigorous irrigation
- Hot water
- Explore/debride wound
- Soft tissue x-rays

Management

- Pack open
- Close loosely
- Tetanus
- Prophylactic antibiotics
- Recheck in 24 to 48h
Needlefish

- 7 species along Atlantic seaboard
- Long and slender 0.5m – 1.5m
- Blue-green on top; silver on bottom
- Surface carnivore predators
- High risk of infection

Needlefish

- Resemble garfish
- Capable of great speed
- Attracted to light
- Jump out of water
Needlefish
- Penetrating injury
- Usually extremities
- Abdomen, ocular, cervical, cranial and articular injuries documented

Antibiotic Selection
- Minor Wounds (Immunosuppressed)
  - Bactrim
  - Tetracycline
  - Doxycycline
  - Cipro

Outpatient Therapy
- Bactrim
- Tetracycline
- Doxycycline
- Cipro

Salt Water
- Imipenem-Cilastatin
- Aminoglycoside
- Bactrim
- Cefoperazone
- Cefotaxime
- Ceftazidime
- Cipro
Fresh Water
- Imipenem – Cilastatin
- Ceftazidime
- Cipro
- Gentamycin
- Bactrim

Ciguatera
- Most common fish-borne illness
- 500 species
- Florida
- Hawaii
- All states

Carnivorous Reef Fish
- Barracuda
- Grouper
- Jackfish
- Amberjack
- Snapper
- Sea Bass

Ciguatoxin
- Heat stable
- Acid resistant
- Lipid soluble
- Gambierdiscus toxicus

Toxic Marine Ingestions
- Increase in consumption
- Increase in fresh and exotic fish
- Increase in recognition

Eat Fish – Live Longer
Eat Oysters – Love Longer
Eat Clams – Last Longer
Ciguatoxin

- Head
- Internal organs
- No effect on taste
- No effect on smell
- No effect on texture

Not Inactivated By:
- Cooking
- Freezing
- Smoking
- Drying
- Salting

Presentation

- Individual susceptibility
- Amount of toxin
- Previous sensitization

Presentation

- Onset within 6 hours
- Nausea/vomiting
- Diarrhea
- Abdominal cramps
- Resolves in 24 to 48 hours

Neurologic Symptoms

- Sensory disturbances
- Hot-cold reversal
- Sensation of loose teeth
- Parasthesias
- Vertigo
- Blurred vision
- Ataxia
Presentation
- Hypotension
- Arrhythmias
- AV block
- Bradycardia
- Shock
- Respiratory failure

Clinical Diagnosis

Management
- Supportive
- Symptomatic
- IVF
- Atropine
- Mannitol

Management
- Amitriptyline
- Tocainide
- Avoid reef fish
- Avoid ETOH
- Reassure
- Psychological support

Scombroid
- Dark-meat fish
- Improperly handled

Scombroid
- Tuna
- Albacore
- Mackerel
- Bonito
- Dolphin
- Bluefish
Scombroid Poisoning
- Improper refrigeration
- Bacterial proliferation
- Degradation of histidine
- Histamine
- Saurine

Presentation
- Onset 30 min to hours
- Facial flushing
- Diaphoresis
- Burning sensation
- Nausea
- Diarrhea

Presentation
- Abdominal cramps
- Palpitations
- Headache
- Sunburn-like rash
- Bronchospasm
- SVT
- Hypotension

Role of Histamine
- Elevated urine histamine
- Elevated urine N-methylhistamine

Clinical Diagnosis

Management
- Gastric emptying
- Activated charcoal
- Benadryl
- Cimetidine
- Albuterol HHN
- Epinephrine
- Steroids