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ACUTE KIDNEY INJURY AFTER A MARINE ENVENOMATION

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Introduction: The Philippines has high marine biodiversity. Most cases of marine envenomations are mild and self limited but occasionally can cause medically significant complications. There are no formal registries about the incidence or prevalence of marine envenomations in the Philippines or any formal registries about the distribution of species of marine life in the archipelago.

Case presentation: We present a 25 year old Caucasian who sought consult for swelling of his right leg. Five days prior to admission, the patient was snorkeling when he felt a sudden pain on his right leg and on the volar aspect of his left arm. This eventually progressed to blister formation.

On the interim, he noted decreasing urine output (< 1 liter per day) but no associated frothy urine, dysuria nor tea-colored urine. Due to worsening edema with associated pain on ambulation, he consulted at the Philippine General Hospital. He was managed as a case of a marine envenomation with secondary skin and soft tissue infection. Initial laboratory results showed azotemia and thrombocytopenia. Urine output was decreased at 200cc. He was referred to nephrology and underwent hemodialysis.

Oliguria persisted through the second and third hospital day. Whole abdominal ultrasound showed normal kidneys with no disparity in the renal size. Both kidneys exhibit normal parenchymal echogenicity with good, corticomedullary differentiation making an underlying chronic kidney disease unlikely. He continued hemodialysis and **was eventually sent home.**

Discussion: A Cnidarian specie found in the area where he was stung is the are Box Jellyfish (*Chironex fleckeri*). *Chironex fleckeri* is considered a coastal species and is never found off shore. *C. fleckeri* is mostly translucent, it is seldom seen by victims even after a sting. Most stings are minor presenting only with local symptoms. However, massive envenomation can lead to systemic complications and even death.

Box jellyfish envenomation causes injury through toxinologic and immunologic mechanisms. *Chironex fleckeri* venom contains several proteins that act on different tissues in the body. The two most abundant proteins are *C. fleckeri* toxin-1 (CFTX-1) and toxin-2 (CFTX-2). These toxins like other cnidarian venom proteins are pore forming and are known to cause hemolysis and adverse effects on the cardiovascular system.

Injury also results from the immune reaction of the body to the tubules embedded after the sting. They have been shown to increase IgM, IgG, interferon and tumour necrosis factor synthesis. They also promote inflammatory cytokine secretion, antibody secretion and population changes in immune cells.

In vivo effects of a related Cnidarian caused prostration, decreased activity, dyspnea, piloerection,

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abnormal movements, convulsions and even death. In anatomical analysis, majority had renal glomerular swelling, renal vesicle stricture and renal tubular dilatation. Other effects included hepatic sinusoid dilatation, pulmonary edema and pleural effusion, and oral and gastrointestinal bleeding. HE staining of organs showed severe injury in kidneys and liver.

Learning Points: Some species of jellyfish in the Philippines can cause acute kidney injury. Adequate first aid is needed to prevent significant complications. Hemodialysis might be needed to manage acute kidney injury caused by marine envenomations.