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Localized neuropathy following jellyfish sting

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Summary: This report describes the case of an 18 year old female who sustained a jellyfish sting on her right wrist. She subsequently developed complete radial, ulnar and median nerve palsies distal to the site of the sting, which recovered fully over the next 10 months. We believe this to be due to a direct neurotoxic effect of the jellyfish venom.

Introduction

Jellyfish stings are not uncommon in tropical areas. The symptoms may vary from a transient dermatitis to fatal systemic manifestations. We report an unusual complication of a jellyfish sting over the wrist. Our patient developed a reversible palsy of the underlying nerves. We are unaware of any previous such reports.

Case report

An 18 year old female was stung on the right wrist by a jellyfish off the coast of Penang. An urticarial rash immediately developed over the affected area which later became violaceous with areas of scarring. Painful swelling of the forearm and hand rapidly developed. She noticed progressive difficulty moving her fingers and they became increasingly numb. She remained systemically well.

By the third day there was complete anaesthesia distal to the wrist and little active movement of the fingers. The radial pulse was present and investigations confirmed normal pressures in the muscle compartments. Nerve conduction studies carried out in Singapore showed that sensory action potentials could not be recorded from the ulnar, median or radial nerves. Compound muscle action potentials, of normal latency, could be elicited by stimulating the ulnar and median nerves at the wrist but not at the elbow.

On her return to England 2 weeks later there was no clinical improvement. Compound muscle action potentials in the hand could not be elicited during stimulation of the median or ulnar nerves at the wrist or elbow. Sensory action potentials could not be recorded distally in the median, ulnar, or radial nerves. Sparse fasciculation was present in abductor pollicis brevis; otherwise no spontaneous or voluntary activity could be recorded from this muscle or abductor digiti minimi. The findings implied a combination of degeneration and conduction block.

Over the next 2 months she developed pain and paraesthaesia in her fingers. There was some clinical recovery in finger extensors. Repeat nerve conduction studies showed no change. Electromyography of abductor pollicis brevis and first dorsal interosseous showed profuse fibrillation potentials and positive sharp waves indicating that degeneration had occurred, but compound muscle action potentials could not be recorded from either muscle.

Ten months after the sting she had made a complete clinical recovery apart from minimal sensory loss in the right radial distribution. A small sensory action potential could now be recorded from the median nerve at the wrist although ulnar and radial sensory action potential remained absent. Normal amplitude compound muscle action potentials could be recorded during stimulation of the median and ulnar nerves at the wrist and elbow, but the motor conduction velocities were slow and the distal latencies prolonged. Electromyography of abductor pollicis brevis and first dorsal interosseous showed some long duration motor unit potentials indicating regeneration.

Discussion

Venom is released from nematocysts on the tentacles of jellyfish into the victim on contact. The most common result is local dermatitis although

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some patients develop systemic symptoms such as malaise, arthralgia, headache and even fatal cardiorespiratory failure.[1,2] The clinical sequelae of jellyfish stings may be due to a direct effect of the toxin, but an immune mechanism has also been suggested because of the identification of venom-specific human immunoglobulins in some patients.[3]

Neurological sequelae of jellyfish stings include pain, muscle spasms and local dysaesthesia. Mononeuritis multiplex following a right forearm jellyfish sting has been described.[4] Neuropathies developed affecting both arms, together with systemic symptoms. The patient fully recovered in 2 months. Our patient differed in that she remained systemically well, her symptoms were localized to the area under and distal to the sting and her recovery was more protracted. Drury *et al.*[5] have described neurological signs in the arm following a jellyfish sting. Here the symptoms were due to arterial occlusion caused by vascular spasm aggravated by severe oedema of the affected limb. These causes were excluded in our patient.

There is a wide variety of jellyfish species in the area around Penang. The species responsible in this case was not identified. However, we understand that a similar complication has not previously been seen in this area.

In conclusion, we describe a patient who developed severe motor and sensory degeneration of the underlying nerves following a jellyfish sting on the forearm. Her recovery was protracted. Because the neural damage was limited to the area of the sting, it seems more likely that the neuropathy was due to a direct toxic effect of the venom rather than an immune mediated reaction.

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