

Necrotising fasciitis caused by *aeromonas sobria*: Not just a simple catfish sting

Ng Bing Wui, Dr. Orth & Tr, Ong Kean Chao, MS Ortho, Ahmad Azraf Azhar, MBBS, Abdul Mutalib Abdul Wahid, MS Ortho

Department of Orthopaedics, Hospital Segamat, Segamat, Johor, Malaysia

SUMMARY

Necrotising fasciitis is a life-threatening infection of the soft tissue which can be caused by different microorganisms, but infection caused by *Aeromonas spp.* or *Vibrio spp.* is frequently associated with higher mortality rate. Necrotising fasciitis progresses rapidly and often need aggressive surgical intervention. We present a rare case of necrotising fasciitis cause by *Aeromonas sobria* which mortality was successfully prevented by swift diagnosis and aggressive surgery.

INTRODUCTION

Aeromonas species are common organism which can be found in fresh water, sewage, tap water and food. They are Gram-negative, facultative anaerobic bacteria and has been found to colonise the intestinal tract and surface of fish.¹ These microorganisms are known to cause diarrhoea, bacteraemia with disseminated intravascular gas production and life-threatening soft tissue infection to human.² We present a case of *Aeromonas* necrotising fasciitis in a diabetic patient after a fish sting to the upper limb resulting in the need of disarticulation at the glenohumeral joint to control the infection.

CASE REPORT

A 51-year-old man with underlying type 2 diabetes mellitus presented to the Emergency Department for right hand swelling for the past one day. Patient was accidentally pricked by catfish (*Arius thalassinus*) pectoral spine at his right thenar eminence while scaling the fish. The fin was removed after the injury and he did not notice any immediate swelling or bleeding. However, swelling of the hand was noted a day after the incident and it rapidly increased in size. Upon further history, patient is not compliant to his oral hypoglycemic agent and has defaulted follow up for the past six months.

On examination, there was a punctum at the right thenar region with pus discharge and diffuse swelling over right hand extending to distal right forearm. There was mottling and petechia around the right hand and right wrist. Crepitus can be felt at the right wrist and distal forearm. Movements of fingers and wrist were restricted and associated with pain. Radiograph of right-hand revealed gas shadow over right

thumb and right wrist under the subcutaneous tissue. [Fig.1] The initial blood investigations showed white cell count of $39 \times 10^9/L$ and C-reactive protein 31.3mg/L. A diagnosis of right hand necrotising fasciitis extending to the right forearm was made and patient was brought into the operating theatre for wound debridement and fasciotomy of right hand and right forearm.

Fasciotomy was done five hours after admission. Intra-operatively, there was dishwater fluid and slough at thenar region, dorsum of right hand, mid palmar space extending to volar and dorsal compartment of distal right forearm. Gas bubbles was noted lining the superficial and deep fascia of right forearm. Forearm muscles are necrotic and sloughy. Fat tissue surrounding the neuromuscular bundles were sloughy and filled with gas bubbles.

Post operatively, patient was stabilised in intensive care unit. The condition of right upper limb worsens the next day with increased mottling of skin and crepitus extending up to proximal arm and shoulder region. [Fig. 2] Crepitus can also be felt over the axillary region. Radial, ulna and brachial pulses could not be felt. Decision for disarticulation of right upper limb at the glenohumeral joint was made in view of extensive loss of muscle bulk and loss of circulation to the upper limb; progressively worsening of infection involving the proximal arm, worsening of sepsis into septic shock requiring intravenous infusion Noradrenaline and bradycardia requiring intravenous Atropine.

Disarticulation was done 24 hours after presentation. The wound was left open to allow drainage. Multiple tissue cultures were taken during the initial debridement and during disarticulation. The samples were cultured for both aerobic and anaerobic microorganisms. *Aeromonas sobria* was isolated from blood agar and MacConkey agar. The colony showed haemolysis on blood agar and exhibit positive oxidase reaction. Identification of the microorganism was done using VITEK 2 ID system. The isolate was sensitive to Amikacin, Cefepime, Ceftazidime, Cefuroxime and Piperacillin-Tazobactam. Patient was treated with intravenous Ceftazidime 2g every 8 hours in ward for two weeks and recovered uneventfully.

Patient was well after two months follow up with the wound healed.

This article was accepted: 7 August 2019

Corresponding Author: Ng Bing Wui

Email: bingwuing@gmail.com



Fig. 1: Radiograph showing gas shadow extending from right thumb till mid forearm along the subcutaneous plane.



Fig. 2: Clinical pictures showing swelling and petechiae extending from wrist up until middle of forearm.

DISCUSSION

Arius thalassinus or locally known as *Ikan Mayong* is commonly used to prepare local delicacies. It belongs to the Ariidae family and has been reported to be one of the venomous Malaysian fishes.³ It can generally be found in river estuaries and brackish water. *Aeromonas species* stays and reproduce in marine environment and belongs to the autochthonous flora of fishes and amphibians. *Aeromonas* also synthesizes enzyme with haemolytic and cytotoxic properties.⁴ These microbes are able to contaminate the gills and intestinal tract of fishes. Virulent *Aeromonas* could infect the fishes causing ulcers, pale gills and septicaemia.

Aeromonas necrotising fasciitis is an aggressive soft tissue infection which is potentially life threatening. It manifests quickly with necrosis of skin, subcutaneous tissue and the underlying fascia. *Aeromonas* necrotising fasciitis has a mortality rate as high as 39% within 96 hours of admission to hospital.⁵ *Aeromonas* infection, *Vibrio* infection, cancer, hypotension and white blood cell band form greater than 10% has been identified as bad prognostic factors of mortality in patients with necrotising fasciitis.

In conclusion, we would like to highlight the fulminant and aggressive nature of this infection as evident by the rapid ascending area of demarcation. We stress upon the importance of prompt decision, aggressive surgery and close monitoring on progress of the disease to prevent mortality. A swift and decisive decision is the utmost important factor in preventing mortality.

FUNDS

The case report did not receive any special funds.

CONFLICT OF INTEREST

No Conflict of interest has been disclosed by the authors.

CONSENT

A written consent was obtained from the patient regarding disclosure of information for the purpose of this publication.

REFERENCES

1. Ashiru AW, Uaboi-Egbeni PO, Oguntowo JE, Idika CN. Isolation and antibiotic profile of *Aeromonas species* from Tilapia fish (*Tilapia nilotica*) and Catfish (*Clarias betrachus*). *Pakistan Journal of Nutrition* 2011; 10(10): 982-6.
2. Shiina Y, Li K, Iwanaga M. An *Aeromonas veronii* biovar *sobria* infection with disseminated intravascular gas production. *J Infect Chemother* 2004; 10(1): 37-41.
3. Phoon WO, Alfred ER. A study of stonefish (*Synanceja*) stings in Singapore with a review of the venomous fishes of Malaysia. *Singapore Med J* 1965; 6(3): 158-63.
4. Tsai YH, Huang KC, Huang TJ, Hsu RW. Case reports: Fatal necrotizing fasciitis caused by *Aeromonas sobria* in two diabetic patients. *Clin Orthop Relat Res* 2009; 467(3): 846-9.
5. Singh G, Sinha SK, Adhikary S, Babu KS, Ray P, Khanna SK. Necrotising infections of soft tissues—a clinical profile. *Eur J Surg* 2002; 168(6): 366-71.