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SHORT COMMUNICATION

Traumatic finger amputation caused by *Lagocephalus sceleratus* (Gmelin, 1789) bite

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Abstract

Marine animal attacks and bites are rarely encountered in Turkey. The invasive alien silver-cheeked toadfish, *Lagocephalus sceleratus* (Gmelin, 1789), is continuously growing in population and hence becoming increasingly tempted closer ashore especially during the summer months. Infamous with its highly toxic flesh, the species is also capable of inflicting severe bites with its quite strong beak-like teeth. We present the first case of a traumatic amputation caused by *L. sceleratus* bite in a child who eventually lost the distal part of her finger, in an incident occurred at the northern Levant shore of Turkey.

Key words: *Lagocephalus sceleratus*, trauma, fish bite, Mediterranean Sea

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The silver-cheeked toadfish, *Lagocephalus sceleratus* (Gmelin, 1789), is a multi-threat alien invasive tetraodontid, which may easily be referred to as the most nuisance fish inhabiting the Mediterranean Sea. It has been responsible for several human intoxications due to the ingestion of potent tetrodotoxin (Kheifets *et al*. 2012), serious damages to fishing gears resulting from the strong bite through fishing lines and nets to get the trapped organisms (Nader *et al.* 2012), and severe ecological impact because of its high growth and reproduction rate, ability to populate variety of habitats and tolerate environmental conditions, lack of natural predators and generalistic feeding habits (Kalogirou 2013; Bilecenoğlu and Öztürk 2018).

In this case report, we present a traumatic *L. sceleratus* bite in a child, constituting the first and most severe case ever reported throughout its

distribution range. The associated problems related to the bite of silver-cheeked toadfish, such as symptoms and complications are also discussed herein. This case report should be seriously taken into consideration by public, governmental bodies, non-governmental organizations and medical caregivers serving in emergency departments in coastal locations.

The incident took place on 3 August 2019 at Kaledran shores located between the Mersin and Antalya city borders of Turkey (Figure 1). The victim was 8-year-old girl and swimming in the sea with a foam buoy. The girl started screaming due to the painful bite of fish on her left hand. Her father immediately pulled her out of the shallow water, while a large-sized *L. sceleratus* was making erratic moves at the incident site, even touching the father's leg. As soon as the father noticed the blood on his child's hand, he immediately took her to the local hospital.

Figure 1: Map showing the incident locality (Kaledran shore)

The young girl presented to the emergency department with lacerations to left-hand fingers and amputation of 1/3 distal part of the 4th finger. There were three bites on the hand. The first bite was an avulsion injury at the distal part of 4th finger of the left hand, the second on the dorsum of his 4th finger and the third

on the dorsolateral aspect of 5th finger (Figure 2). The injury to the 4th finger was more than deep laceration as an avulsion injury in which the distal part was not found (Figure 3). The wounds were irrigated with saline solution and sterile dressings applied at the emergency department. Then the patient was transferred to another hospital due to the lack of orthopedic surgeons to treat the child. After transfer of the patient to the hospital, the injury sites were reevaluated and the common imaging test ‘‘X-ray’’ was used to assess the foreign materials and the loss of distal phalanx which was remarkable. The patient was taken to the operating room for an additional debridement and surgery. The revision of surgical amputation was performed to the distal interphalangeal joint of the 4th digit. To prevent a soft tissue infection caused with water-borne microorganisms, the patient was given antibiotic therapy which included amoxicillin clavulanate. Apart from the antibiotherapy, ibuprofen as an analgesic drug and oxytetracycline hydrochloride pomade were also added to the treatment.

Figure 2. The biting marks of *Lagocephalus sceleratus* on the fingers

Figure 3. The avulsion injury of the 4th finger

All members of the family Tetraodontidae have four powerful tooth plates (two above and two below) forming a strong beak-like mouth, suitable for crushing and slicing a broad range of prey items (Fraser *et al*. 2012). Tetraodontids have the unique ability of tooth regeneration (Thiery *et al*. 2017), indicating a teeth growth throughout their lives that should continuously get worn by proper hard shelled food items. This distinctive dentition also possesses a threat to humans, due to their sharp cutting edges (Figure 4). In the southeast Asian coasts, *L. sceleratus* has been reported as an aggressive species that can inflict painful bites, which is especially very dangerous in a feeding frenzy, attacking everything in sight (Allen 1999). Due to the lack of scientific data regarding the actual attack on humans through biting, the exact number of accidents is not known in Turkey. There are only word of mouth reports of two victims with complaints of mild injury from toadfish's bites in Antalya (Ünal and Göncüoğlu Bodur 2017).

Figure 4: The sharp cutting edges of tooth plates of *Lagocephalus sceleratus*

According to the available scientific publications, there is only one case report describing a traumatic pufferfish bite in a child in Far North Queensland. The boy suffered injuries to the left foot with a deep laceration of the great toe, and to the right foot with a large flap from the plantar side about his arch. After his medical and surgical treatments, his wound healed completely (Farrel and Turner 2013). However, an online news portal (The Courier Mail 2012) referring to Farrel and Turner's publication describes the fish attack led to severe injury of the big toe and heel in a child, the present case appears to be the first report of a traumatic amputation caused by the bite of a silver cheeked toadfish in the Mediterranean Sea including Turkey. The tissue loss occurred as a result of an injury made with a strong beak, which have caused a remarkable damage to this child's finger as well as her psychological state. Although

treatment was prompt, unfortunately, she was likely to suffer from the psychological effects of the trauma due to the fact that the distal part of the finger could not be reattached.

The important aspect of this case is the sudden attack of the pufferfish to the girl for no reason. While other injuries related to lionfish, stingray, barracuda occur when they are held or stepped on accidently, this attack occurred spontaneously without any threat to the animal. As a result, necessary precautions should be taken such as intensifying of public awareness, informing doctors and hospital staffs to manage this type of unusual accidents, and spreading the news of the seriousness of this issue via media, including social media. Governmental action is also required for distributing posters around the country that indicate the hazards of the silver cheeked toadfish. Performing health safety campaigns regarding the *L. sceleratus* borne effects of such injuries would be helpful in enhancing knowledge of swimmers, divers, fishermen and local authorities.

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Disclosures

The authors have no commercial associations that might be a conflict of interest in relation to this article.

Balon balığı, *Lagocephalus sceleratus* (Gmelin, 1789) ısırması sonucu el parmağında travmatik kopma ile yaralanma olgusu

Öz

Deniz canlısı saldırısı ve ısırığıyla yaralanma, Türkiye'de nadir görülür. Göçmen türlerden olan balon balığı, *Lagocephalus sceleratus* (Gmelin, 1789), denizlerimizde populasyonu hızla artmakta ve yaz aylarında kıyılara daha çok yaklaşmaktadır. İç organlarının toksik olması bilinse de, oldukça güçlü kesici ön dişleriyle ısırarak yaralanmaya da yol açabilir. Literatürde ilk defa, Türkiye'nin Akdeniz kıyısında *L. sceleratus* ısırığıyla çocuk olguda parmak kopması ile sonuçlanan vakayı bildirmekteyiz.

Anahtar kelimeler: *Lagocephalus sceleratus*, travma, balık ısırması, Akdeniz

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