

A Rare Focal Inflammatory Process After a Pufferfish Bite

Balon Balığı Isırığı Sonrası Nadir Görülen Bir İnflamatuvar Yanıt Olgusu

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ABSTRACT

Aim: Attacks and bites of marine animals are very rare in Turkey. The highly venomous pufferfish (*Lagocephalus sceleratus*), which often causes systemic toxicity with its toxin (tetrodotoxin), could also cause focal toxicity due to bites.

Case: A 57-year-old healthy female patient was admitted to the ED with the complaints of inflammation and wounds on the anterior aspect of the leg after a fish bite. 15 days before the admission, complaints of inflammation and pain occurred because of a pufferfish bite in the sea near the shore. In this case, we aimed to present the clinical changes detected after the 6-week follow-up of the patient who presented to the emergency department (ED) after a pufferfish bite that showed a local course.

Conclusion: The tetrodotoxin (TTX), which is especially found in the liver and reproductive organs of puffer fish, acts through sodium channels. There is no treatment or antitoxin available for enteral systemic poisoning. Symptomatic supportive treatment is recommended. In this patient who did not have any chronic disease, the healing process took over 2 months after puffer fish bite. In countries with a coast to the sea such as Turkey, it is necessary to be careful about the clinical situations that may occur after contact with sea creatures. Global warming and illegal hunting, can cause sea creatures to reproduce and live, in unusual habitats. This leads to unconventional and unknown medical conditions after wilderness contacts.

Keywords: Tetrodotoxin, pufferfish, wilderness medicine

Öz

Amaç: Türkiye'de deniz canlılarının saldırılarına bağlı yaralanmalar çok nadir görülmektedir. Genellikle toksini (tetrodotoksin) ile sistemik toksisiteye neden olan oldukça zehirli balon balığı (*Lagocephalus sceleratus*), ısırıkları sonrası fokal toksisite meydana gelebilir.

Olgu: 57 yaşında sağlıklı kadın hasta, balon balığı ısırması sonrası bacağına ön yüzünde iltihaplanma ve yara şikayetleri ile acil servise başvurdu. Başvurudan 15 gün önce, denizde kıyıya yakın bir yerde balon balığı tarafından ısırılma öyküsü olduğu öğrenildi. Isırık bölgelerinde iltihaplanma ve ağrı şikayetleri ile seyreden ve uzun süreli tedavi gerektiren lezyonlar oluştuğu görüldü. Bu olguda, lokal seyir gösteren balon balığı ısırığı sonrası acil servise başvuran hastanın 6 haftalık takibinde saptanan klinik değişikliklerin sunulması amaçlandı.

Sonuç: Tetrodotoksin (TTX), balon balıklarının özellikle karaciğer ve üreme organlarında bulunur. Sodyum kanalları üzerinde etkisini gösterir. Enteral sistemik zehirlenme vakaları için herhangi bir tedavi veya antitoksin mevcut değildir. Semptomatik destekleyici tedavi önerilir. Herhangi bir kronik hastalığı olmayan hastamızda balon balığı ısırığı sonrası lokal bulguların iyileşme süreci 2 aydan uzun sürdü. Deniz canlılarının olağandışı habitatlarda üremesine ve yaşamasına neden olan küresel ısınma ve yasadışı avlanma sebebiyle alışılmadık vakalar ve bilinmeyen tıbbi durumlar tespit edilmektedir. Türkiye gibi denize kıyısı olan ülkelerde deniz canlıları ile temas sonrası oluşabilecek alışılmamış klinik durumlarla karşı dikkatli olunması gerekmektedir.

Anahtar Kelimeler: Tetrodotoksin, balon balığı, doğa tıbbı

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Introduction

Attacks and bites of marine animals are very rare in Turkey. The highly venomous pufferfish (*Lagocephalus sceleratus*), which has strong teeth, lives widely in tropical waters such as the Indian and Pacific oceans (1). This species is seen more frequently in the Mediterranean since the beginning of the 2000s and has also started to be seen in shallow waters due to the increase in sea water temperature recently (1). It often causes systemic toxicity with its toxin, called tetrodotoxin, when consumed as food (2). However, there are cases of focal toxicity due to bites in the literature, albeit rare. In the literature, the case of amputation due to pufferfish bite occurred in Turkey in 2019, but focal toxicity findings were not mentioned in the reported case (3). In this case, our goal is to present the clinical changes detected after the 6-week follow-up of the patient who presented to the emergency department with the clinical condition that appeared after the pufferfish bite that showed a local course. This rare case is reported to contribute to the current clinical literature.

Case Report

A 57-year-old healthy female patient was admitted to the emergency department with the complaints of inflammation and wounds on the anterior aspect of the leg after a fish bite. 15 days before her admission, complaints of inflammation and pain occurred because of a pufferfish bite in the sea near the shore of the Susanoglu region of Mersin. The 1st day lesions of the patient are shown in Figure 1A.



Figure 1A. Lesions on the first day of contact

Figure 1B. Lesions on the 12 day after contact

The patient was admitted to another ED with this complaint, and was given tetanus prophylaxis. The patient was then discharged with amoxicillin-clavulanic acid treatment recommended for 10 days. After antibiotic therapy, on the 12th day after contact, she presented to our ED due to development of redness and pain around the bite sites. On physical examination, there were three lesions on the right

tibia posterolateral aspect and one lesion 5x5 mm necrotic area on the left tibia medial aspect, with erythematous, edematous, and minimal serous discharge accompanying the lesions (Figure 1B). The laboratory results were as follows: White Blood Cell: 9200/ μ l, Erythrocyte Sedimentation Rate: 3 mm/h, C-Reactive Protein: 0.22 mg/dL, procalcitonin: 0.029 ng/dL. The patient's other laboratory results were in normal ranges. The patient was consulted to the infectious diseases department, and they suggested oral sodium fusidate and ciprofloxacin.

In the control examination, on the 17th day of contact, there were enlargement of the necrotic lesions described, increase in erythematous tissue and pain complaints. Around 1x1 cm necrotic areas, approximately 5-6 cm purpuric, indurated, painful lesions with serous discharge were detected. There was also edema and increased radial diameter in the right leg (Figure 2).



Figure 2. Lesions on the 17 day after contact

No pathological finding was detected in laboratory tests. The Venous Doppler Ultrasound revealed no venous thromboembolism. The patient was consulted to the plastic surgery department regarding the necessity of tissue debridement. However, it was recommended to wait for the patient's response to antibiotic therapy. In addition to antibiotherapy, local povidone iodine application and dressing with topical oxytetracycline were recommended by the infectious diseases department. The lesion findings on

the 22nd day, 33rd day and 41st day after the recommended treatments are shown in Figures 3A, 3B and 3C, respectively.



Figure 3A. Lesions on the 22 day after contact

Figure 3B. Lesions on day 33 after contact

Figure 3C. Lesions on the 41 day after contact

Written informed consent was obtained from the patient for publication of this case report.

Discussion

The puffer fish, whose scientific name is *Lagocephalus sceleratus*, is a fish species belonging to the family Tetraodontidae. When consumed as a food, it causes fatal poisoning with its neurotoxin, called tetrodotoxin (TTX), which is especially found in the liver and reproductive organs of puffer fish. It is known that TTX is not synthesized in puffer fish but is produced by some bacteria and comes to the fish through the food chain. TTX acts through sodium channels (2,4). There is no treatment or antitoxin available for enteral systemic poisoning. Symptomatic supportive treatment is recommended. Rare cases of small bites have been reported in South Asia, highlighting that the puffer fish can cause dangerous injuries with its strong teeth (5). Since the cases of injury by sea creatures are rarely seen in our country, it is very difficult to consider them in etiology and treat them. This can be explained with global warming and illegal hunting, which cause sea creatures to reproduce and live, in unusual habitats. This leads to unconventional and unknown medical conditions after wilderness contacts. Even in our patient who did not have any chronic disease, the wound healing process took over 2 months.

Conclusion

Due to many climatic and human factors, sea creatures acquire the ability to live outside their natural habitats and may cause unusual and difficult-to-manage injuries. It is necessary to increase the information about puffer fish contacts, especially in countries with a coast on the Mediterranean, such as Turkey. In addition, a plan should be established for the treatment of opportunistic infections that may occur after such bites.

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