Human Remains Recovered from a Shark Collected in the Marine Waters of Iraq: A Case Report

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Abstract The incidents of shark attacks in the marine waters of Iraq and the estuary of Shatt al-Arab River have been reported. However, several cases were not archived, and, therefore, the actual statistic of such cases is not known. What is newly reported in the present chapter is the case of retrieving human remains from the stomach of a shark. This is the first incidence of its kind to be reported from the marine waters of Iraq. The description of the human bones found in the stomach of the shark sheds light on the damage that caused by the teeth of the shark to the bones of the victim, which is related to the feeding habit of the shark. Since there were no fractured, it seems that the victim's parts are swallowed and then digested due to the disability of the sharks to chew their food.

Keywords Incidences · Shark · Bones · Cases · Victims

1 Introduction

For a long time, the shark attacks are considered among the fears of human (Coppleson 1958; Hazin et al. 2008). Such fears have accompanied with society insight of the danger of shark assaults, which intensified by the fact that the cases of shark–human contacts and shark scavenging have augmented in the last several years (Burgess 1990; Stock et al. 2017).

Among the shark species that have shown a close human interaction are the white shark (*Carcharodon carcharias*), tiger shark (*Galeocerdo cuvier*), and bull shark (*Carcharhinus leucas*) (Burgess and Callahan 1996; Clua et al. 2014). With less cases of attacks, smaller species, such as the blacktip shark (*Carcharhinus limbatus*) and spinner shark (*Carcharhinus brevipinna*) were involved and could cause dangerous to human (Lentz et al. 2010; Stock et al. 2017).

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L. A. Jawad (ed.), *The Arabian Seas: Biodiversity, Environmental Challenges and Conservation Measures*, https://doi.org/10.1007/978-3-030-51506-5_50

It is possible to classify the shark attacks into numerous classes: gratuitous "hit-and-run," "bump-and-bite," and "snitch" attacks (Allaire et al. 2012; Stock et al. 2017). Hit-and-run assaults are the utmost predominant, comprising about 80% of shark assault's cases, and utmost frequently happen in shallow water (Lentz et al. 2010; Stock et al. 2017). It appears that the people in these circumstances are misguided for more characteristic victim and then left alone after a single combat. Sufferers usually withstand shallow scratches from contact with the shark's rough teeth found on the skin of shark and/or a slash or tooth hollows from the shark's exposed teeth, ensuing in less severe wounds than in other kinds of assaults (Clua et al. 2014; Stock et al. 2017). Bump-and-bite and sneak assaults are more probable to happen in slightly deeper water, and constancies between these assaults and normal shark-nourishing actions advocate that the people are, in such circumstances, the direct predatory target of the shark (Burgess 1989; Stock et al. 2017). In bump-and-bite attacks, the shark will circle and bump the target prior to set an offense, maybe to estimate possible hazard or to debilitate their prey, while sneak attacks come abruptly and without notice. These last two kinds of assaults, which frequently include numerous bites, are more hazardous for humans, ensuing in greater sums of blood and tissue loss in the violence, as well as in higher death rate (Burgess 1989; Lentz et al. 2010; Stock et al. 2017).

The valuation of damage to the human skeleton is vital to all forensic scientists. There are large number of reports published in a professional journals about cases related to the influence of damage on the human body (Merbs 1989; Spits 1993). There has been an abundance of investigations on the influences of terrestrial foragers on skeletal leftovers, but disturbance triggered by marine foragers and killers is not well-known. Among these, shark assaults on humans are considered rare (Nakaya 1993; Stock et al. 2017).

In the present chapter, a case finding human skeletal parts in the stomach of the tiger shark *Galeocerdo cuvier* (Péron and Lesueur 1822) (Stock et al. 2017) was reported. This incident was observed by fisherman operating in the marine waters of Iraq at Basrah City, south of Iraq. The effects of damage caused by shark to human skeletal parts were described.

2 The Tiger Shark *Galeocerdo cuvier* (Péron and Lesueur 1822)

This species of shark is mostly marine and sometimes go into brackish waters preferring benthopelagic habitats (Riede 2004) and living at depth not exceeding 800 m (Love et al. 2005). It has a circumglobal type of dispersal and recorded from the Arabian Gulf (Carpenter et al. 1997). Individuals of this species reach a maximum length of 3500 mm (Vidthayanon 2005). They are usually found nearby to mainland and insular shelves, off piers, and docks in ports (Compagno 1984). The tiger shark feeds on other sharks, rays, bony fishes, marine mammals, tortoises,

Fig. 1 Tiger shark, *Galeocerdo cuvier*. *Courtesy of* Hamid Badar Osmany, Karachi, Pakistan

Fig. 2 Tiger shark, *Galeocerdo cuvier* showing jaws and sharp teeth. *Courtesy of* Hamid Badar Osmany, Karachi, Pakistan

seabirds, sea snakes, squids, gastropods, crustaceans, and debris (Compagno and Niem 1998). This species has a bad reputation in human attack records next to *Carcharodon carcharias*. It is ovoviviparous (Dulvy and Reynolds 1997) and could have up to 80 young of 51–104 cm (Myers 1991). To give the readers an idea about the shape of the tiger shark and how sharp its teeth are, images were obtained from the net and shown in Figs. 1 and 2.

3 Case Report

The present case is similar to the case described by Işcan and McCabe (1995), where human remains were discovered in the stomach of a tiger shark caught near Hollywood Beach, Florida.

Fig. 3 Tiger shark, *Galeocerdo cuvier* showing smaller shark in its mouth. *Courtesy of* Hamid Badar Osmany, Karachi, Pakistan

Three fishermen operating in the marine waters of Iraq, south of Basrah City, north of the Arabian Gulf caught 2.4 m long tiger shark (*Galeocerdo cuvieri*). After taking their catch including the shark to the shore once they reach there, the fishermen noticed that there is something unusual about the belly of the shark as it looks filled with something hard. They thought there were treasures in the stomach of the shark. Therefore, they cut open the abdomen of the shark looking for the treasure, but the surprise was waiting for them. They discovered that what inside the stomach of the shark no treasure but a human skeletal remains. A left arm complete with hand was emerged from the stomach of the shark as the fishermen further cut the stomach of the shark. Soft tissue was found on the arm from about the elbow to the wrist. Remnants of nails were observed tacked on the fingers. No other human remains were seen in the stomach of the shark. The human remains and the shark were taken to the nearest clinic to report the case. A huge work was performed to recognize the individual, but no affirmative ID was done. The police called in for investigation, and the remains were kept in cold storage for further forensic examination. After a close inspection, the human remnants showed a cream-colored, granular coating that was most projecting on the lenient tissue, which later on appeared to be an adipose tissue. This material has a dusty, granular texture and could be an outcome of freezing and maybe the absorption of some digestive enzymes of the shark (Fig. 3).

The forensic investigations revealed that the victim was a young man in his early 30s, with a height of around 165 cm. After examining the bones of the victim, it appeared they hold traces of teeth of the shark. The bites are exclusive in having semicircular shapes and are gathered primarily on the midshaft of the left anterior and lateral surfaces of the radius and ulna. The left humerus has profound bite dents on the anterior surface near the level of the elbow. These holes were possibly created by the ends of the teeth which protrude from the lightly serrated dental body. The evidences of shark attack on the corpse are comparable to those reported in another

shark attack in another part of the world (Işcan and McCabe (1995). Judging from the size of the shark and its overall power, there is a great hesitation that the casualty survived this attack. The time since death of the victim is nearly difficult to determine.

4 Remarks

The issue of shark attacks is not unusual in the marine waters of Iraq. Coad and Al-Hassan 1989) have reported on several cases of shark attacks happened in Shatt al-Arab River, Basrah, Iraq. Although the area where the attacks occurred is a freshwater environment, attacks of sharks usually happened as certain species of sharks showed to ascend rivers for feeding such as *Carcharhinus leucas*. Moreover, some species of sharks select areas under date palms on the bank of a river. Blegvad and Loppenthin mentioned that sharks at Muhammara (Khorramshahr, Iran) were said to position themselves under palm trees in order to feed on dropping dates. Though this area of southern Iraq has a high concentration of date palm plantations and the connotation may be accidental.

The feeding biology of the tiger shark showed that this species of shark prefers limbs to other sections of the body (Burgess 1990). This might be due to state of the extremities in the water as they swing and considered as a good attraction point for shark to attack. Steel (1985) suggested that the technique the sharks used in their feeding is to locate their teeth under the dangling limb and with a turning movement permitting the teeth to cut the extremities like a saw. In doing so, the limbs will be removed from their connection (Coppleson 1963). The shark has no ability to chew their food; instead they strip the flesh from the bones and leave clear marks on them. In the present case, there is sign of flesh having been removed from the limb (Işcan and McCabe 1995).

Cousteau and Cousteau (1970) described the digestive mechanics and chemistry of sharks as exceptional. They designate this exclusivity as follows: “Sharks guts, as related with those of mammals, are tremendously short: an adult man has intestines around thirty feet in length, while a nine-foot shark has a maximum of about seven feet. Furthermore, sharks seem to have the unbelievable capability to digest only specific portions of their stomach contents, while other portions remain almost intact for long periods. This may be a form of natural reserve that allows the shark to live for some time by storing and preserving a single meal. Sir Edward Allstrom, Director of the Taranga Zoo, near Sydney, Australia, has recounted the case of a 15-foot tiger shark housed in one of the zoo’s tanks. Over a period of 21 days, the shark rejected the horse meat it was fed, first swallowing it and then vomiting it a few days later. The shark died and an examination of the contents of his stomach shown two faultlessly conserved dolphins. They had seemingly been consumed a few hours before the capture of the shark. How it conserved the dolphins complete and disallowed the horse meat remains a paradox.” Besides, the gastric juices turn the digestive system extremely harsh, and the animals are capable to vomit some surplus

items from their stomachs while holding others (Steel 1985). According to Steel (1985) the gastric juice of the tiger shark contains strong hydrochloric acid, which is able to dissolve bones, yet they are capable to keep food substances moderately fresh in their stomachs for long times and to vomit undesirable substances at will.

The damage caused to the bones of the victim in the present case revealed that the arm was entirely taken by the shark, whereas the victim was in the water or near the surface of the water. Why the victim was in the water? The ability of sharks to sink small boat has been reported (Nelson 1983), and it is well possible that the boat of the victim has been kept side by the shark. The postmortem examination revealed that the soft tissues did not show any sign of decay. This could advocate that the victim was attacked short time before catching the shark.

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