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A Recreational Fishing Death Due to a Jumping Spanish Mackerel (*Scomberomorus commerson*)

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CASE REPORT

Abstract: Commercial or recreational fishing may be associated with a wide range of potentially lethal events. We report the case of a 56-year-old man who died of blunt force chest and abdominal trauma after impact with a large Spanish mackerel (*Scomberomorus commerson*) that had jumped into his recreational fishing boat. Injuries at autopsy included soft tissue bruising with fractured ribs, a ruptured diaphragm, intestinal and mesenteric contusions, contusion and disruption of the pancreas, and hilar splenic lacerations with a left-sided hemothorax and a hemoperitoneum. The clear temporal association of pain and progressive deterioration leading to cardiac arrest after the impact indicated that lethal injuries had been sustained. A variety of fish and cetacean species are known to jump out of the water sometimes to escape predators. It was reported that a large number of jumping fish being pursued by sharks were observed in the harbor on the day of the reported incident. This case demonstrates that lethal blunt abdominothoracic trauma may be caused by impact with Spanish mackerel, increasing the range of potentially dangerous situations that may be encountered while fishing.

Key Words: Spanish mackerel, leaping, blunt abdominothoracic trauma, fishing, forensic

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The types of lethal injuries inflicted by animals vary greatly depending on the particular environment of the incident and the animal involved. Blunt trauma is commonly associated with crushing, butting, or stomping, and sharp trauma with biting or goring.¹ Injuries may be deliberately inflicted in cases of predatory activities when an animal is hunting for food, or defending its territory, or merely being aggressive.^{2–4} Alternatively, injuries may be entirely accidental, or related to an animal's size or unexpected movements.⁵

Deaths caused by animals that inhabit oceans may be the result of blunt or sharp trauma, drowning, or envenomation. The commercial fishing industry has a very high incidence of injury and death due to the often dangerous conditions at sea and the use of heavy equipment. Injuries from large fish landed on decks have also been described.^{6,7} The following case illustrates a very rare event, death due to blunt force trauma from impact with a large Spanish mackerel (*Scomberomorus commerson*) that had jumped into a recreational fishing boat.

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A 56-year man was fishing from a recreational vessel in a coastal harbor in Northern Australia when he was witnessed by several people to be struck on the left side by a Spanish mackerel that had jumped out of the water. The large fish, weighing approximately 20 kg and measuring 150 cm (Fig. 1), landed within the vessel after striking the decedent. The fisherman was noticeably in pain and moved to the bow of the vessel where his condition deteriorated. Medical assistance was sought and provided; however, resuscitative efforts were futile, and he died approximately 1 hour after the incident. At the time of the impact, he had been wearing a lightweight synthetic long-sleeved fishing shirt. His medical history included dyslipidemia and indigestion.

At autopsy, the body was that of a large adult man (weight, 93 kg; height, 163 cm; body mass index, 35 kg/m²) with evidence of recent attempts at medical resuscitation. Externally, the point of impact with the fish was marked by a 7 × 19-mm abrasion at the left costal margin situated 145 mm below the level of the left nipple, 240 mm to the left of the anterior midline, and 1100 mm above the left heel. It was surrounded by an area of purple-blue bruising measuring 45 × 115 mm with associated soft tissue swelling (Fig. 2). A smaller abrasion measuring 5 × 6 mm was present 19 mm posterior to this. The only other significant external finding was the hook of a fishing lure that was superficially embedded in the skin of the lateral aspect of the left ankle, most likely occurring after the fish strike.

Internal examination revealed a considerable blunt force traumatic injury to the left inferior aspect of the chest and upper quadrant of the abdomen directly underlying the point of impact on the left inferolateral aspect of the chest with diffuse surrounding soft tissue hemorrhage of the left inferolateral chest wall (Fig. 3), fractures of the left seventh to ninth ribs, and rupture of the left hemidiaphragm. Approximately 700 mL of fluid blood was present within the left chest cavity. There were diffuse intraperitoneal intestinal and mesenteric contusions (Fig. 4), diffuse contusions and disruption of the pancreas, and hilar splenic lacerations (Fig. 5) with 250 mL of blood within the peritoneal cavity. Resuscitation-related rib fractures and anterior mediastinal contusions were also present. The only natural diseases present were hepatomegaly with steatosis and patchy atherosclerosis of the abdominal aorta. Toxicological analysis revealed therapeutic levels of moclobemide. Death was due to blunt force chest and abdominal trauma with the injuries in keeping with the reported incident.

DISCUSSION

A number of fish and cetacean species are known to jump out of the water including mackerel, carp, sturgeon, rays, sharks, dolphins, porpoises, and whales.⁸ The reasons for this behavior are quite diverse and include escaping from predators, catching prey, migrating up rivers to reach spawning grounds, assisting with population dispersal, or merely as a response to being startled by boats. It was reported that a large number of jumping fish were observed in the harbor on the day of the incident, apparently because they were being pursued by sharks. It is suggested that



FIGURE 1. A 20-kg mackerel that jumped out of the water and into a recreational fishing boat colliding with a 56-year-old man.



FIGURE 2. A 7 × 19-mm abrasion at the left costal margin with surrounding purple-blue bruising with associated soft tissue swelling marking the point of impact with the fish. Linear markings adjacent to this area are from a defibrillator pad that had been removed.

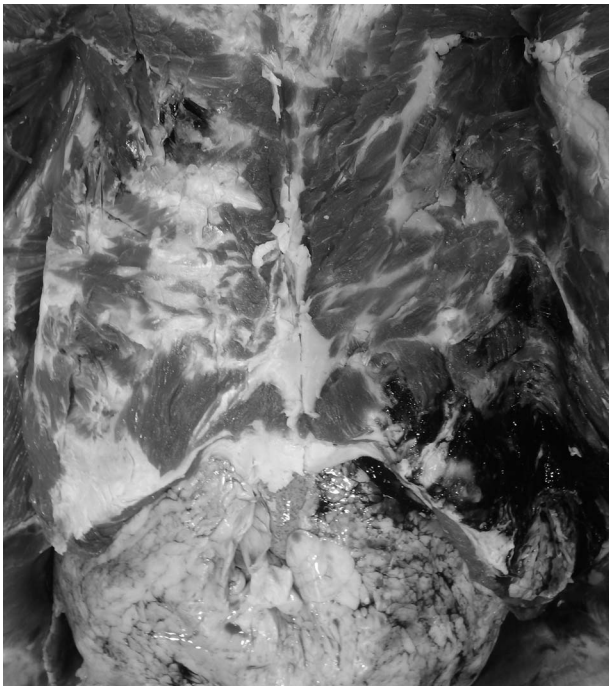


FIGURE 3. Extensive subcutaneous bruising of the left inferolateral aspect of the chest underlying the point of impact with fractures of the left seventh to ninth ribs.

marine flying fish also use this tactic to escape from squid and dolphins.⁹ The Archer fish (*Toxotes microlepis*) and the Silver arowana (*Osteoglossum bicirrhosum*) both jump out of the water to capture prey, that is, so-called aerial feeding events. Alternatively, sockeye salmon (*Oncorhynchus nerka*) and the brook trout (*Salvelinus fontinalis*) jump to overcome obstacles during their annual migrations.^{9,10} Certain fish such as the gray mullet (*Mugil cephalus*) may jump into the air to augment respiration,¹¹ whereas the goby (*Bathygobius soporator*) uses jumping to move from one rock pool to another.¹²

In the reported case, a 20-kg Spanish mackerel had jumped out of the water in a coastal harbor and impacted the victim who was on a recreational fishing trip. Spanish mackerel are found throughout the Indo-West Pacific region, particularly in tropical and subtropical waters, but also in the Atlantic Ocean and other areas of the Pacific and Indian Oceans. They tend to live in open water, often close to shore, rather than near the bottom.¹³ These fish can grow up to 2.4 m in length and weigh more than 40 kg.¹⁴ They may be solitary or found in large numbers and are a source of food or sport for humans.¹³

A similar case of lethal impact with a jumping fish occurred in Florida, when a 5-year-old girl died after being hit by a 90-kg jumping sturgeon. These fish can leap up to 2 m in the air, and the media report noted a previous case where a 50-year-old woman also in a boat on the Suwannee River in Florida survived a similar impact, although she had a ruptured spleen.¹⁵

Sharp force trauma may also occur with mackerel impacts, and a 66-year-old woman had her throat cut by the fins of a 10-kg mackerel in the same harbor as the reported case in 2018.¹⁶ Penetrating trauma may occur from a variety of other jumping fish with a case of penetrating abdominal trauma leading

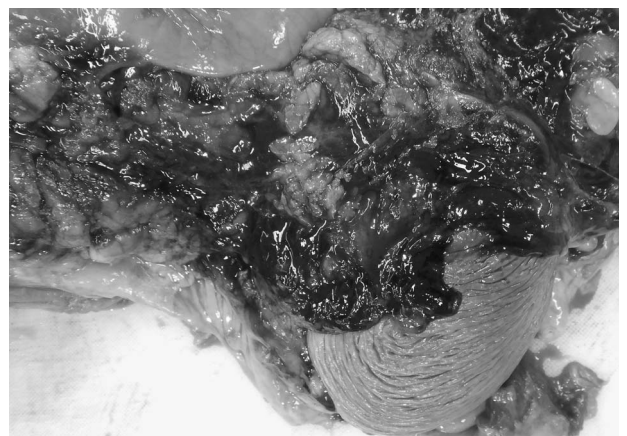


FIGURE 4. Diffuse intestinal and mesenteric contusions were noted within the abdominal cavity.



FIGURE 5. Laceration and disruption of the hilum of the spleen.

to biliary peritonitis from a needle fish, also known as garfish, in a man commercially fishing in the Bay of Bengal off the coast of India. These fish may leap up to 1.8 m (6 ft) out of the water¹⁷ and may be provoked to leap if bright lights are being used during fishing.¹⁸

Cases of penetrating injuries have also been reported from Papua New Guinea with cases of penetration of the thorax and abdomen (in one case impaling the thoracic aorta) and also the spinal canal and skull, the latter through the optic foramina. In these cases, the external injuries may appear quite unremarkable.¹⁹ A jumping marlin managed to penetrate its bill through a sports fisher's posterior pharyngeal wall between the atlas and the occiput.²⁰ Although stab wounds from stingrays and ratfish have the potential to be lethal because of significant cardiovascular injuries, these usually occur in the water or during handling.^{21–23}

Although attempted resuscitation could certainly have contributed to some of the findings at autopsy, such as rib fractures and anterior mediastinal contusions, it would be unusual to sustain so many injuries, including a rupture of the diaphragm, from resuscitation.²⁴ Also, there is a clear temporal association of pain and progressive deterioration leading to cardiac arrest after the impact. Although mechanisms that are associated with commotio cordis may have been involved in the death,²⁵ it is clear that the primary impact occurred over the left costal margin associated

with underlying chest wall and rib injuries. By definition, commotio cordis involves “instantaneous cardiac arrest,” produced by nonpenetrating chest blows in the absence of heart disease or identifiable morphologic injury to the chest wall or heart.²⁶

In conclusion, this report demonstrates that lethal blunt abdominothoracic trauma may be caused by impact with Spanish mackerel when they are leaping out of the water. This type of event, although extremely rare, increases the range of potentially dangerous situations that may be encountered while fishing.

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