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CASE REPORT

Multiple Thoracic and Thoracoabdominal Trauma: Case Report

Hakan SALCI * Göksen ÇEÇEN * O. Sacit GÖRGÜL * İbrahim AKIN *

* Uludağ Üniversitesi Veteriner Fakültesi Cerrahi Anabilim Dalı, Bursa - TÜRKİYE

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Summary

Two dogs were presented with the history of wild boar attack during hunting. Clinical and radiological examination revealed thoracic and thoracoabdominal pathologies. Perioperatively, hemothorax, ruptured right middle lung lobe and pericardium, right partial caudal lung lobe contusion and rib fractures were determined in case 1. Hemoabdomen, caudal liver lobe rupture, diaphragmatic hernia, hemothorax, right caudal and accessory lung lobe rupture and rib fracture were observed in case 2. Pathologies were treated with emergency operative approaches. Postoperative at the end of 1st and 6th month, owners informed that the dogs were healthy. It is expressed considering these cases that mortal traumas can be caused by wild boar attacks in dogs and these can be treated with correct emergency surgery approaches.

Keywords: *Thoracic trauma, Thoracoabdominal trauma, Wild boar attack, Dog*

Multiple Torasik ve Torakoabdominal Travma: Olgu Sunumu

Özet

Av sürecinde yaban domuzu yaralaması öyküsü ile iki köpek kliniğimize sunuldu. Klinik ve radyolojik muayenede toraks ve torakoabdominal patolojiler tanındı. Perioperatif süreçte olgu 1'de; hemotoraks, sağ akciğer orta lobunda ve perikartta ruptür, sağ akciğer kaudal lobunun parsiyal kontüzyonu ve kosta kırıkları belirlendi. Olgu 2'de; hemoabdomen, karaciğerin kaudal lobu ruptürü, hernia diyaframatika, hemotoraks, sağ akciğer kaudal ve aksesor lobu ruptürü ve kosta kırığı saptandı. Patolojiler, acil operatif girişimler ile sağaltıldı. Postoperatif birinci ve altıncı ayın sonunda hasta sahiplerinden köpeklerin sağlıklı olduğu öğrenildi. Av sürecinde köpeklerde ölümcül travmaların yaban domuzlarınca oluşturulabileceği, ancak doğru ve acil cerrahi girişimlerle hastaların yaşam şansı bulacağı bu olgulara dayanarak ifade edilebilir.

Anahtar sözcükler: *Torasik travma, Torakoabdominal travma, Yaban domuzu vurması, Köpek*

INTRODUCTION

Multiple thoracic and thoracoabdominal trauma pathologies are commonly encountered in dogs [1-4]. These trauma cases are considered as critical cases, and dogs with multiple trauma need emergency procedures and immediate veterinary attention [1,3,5-7]. Etiology of the multiple trauma are car accidents, blunt or penetrating subjects (stubbing, etc.), bite wounds, falling down, projectiles or bullets, stabbing, kicks, punches, human abuse and mistreatments [1,2,4,8-11]. In this report, wild boar attack was determined as an etiology of multiple thoracic and thoracoabdominal trauma and its results were described in two dogs.

CASE HISTORIES

Two male, Barak breed dogs (case 1: 5 year-old, case 2: 7 year-old) were presented in different times with the history of wild boar attack during hunting. Clinical examination revealed open pneumothorax, perforated thoracic wounds and rib fractures in case 1, and perforated thoracoabdominal wounds and pancreas eventration in case 2. Both dogs were dyspneic and had cyanotic mucous membranes, up to 120/min pulsation, 2.5-3 seconds capillary refilling time and hypothermic.

Initial medical management was performed in the same manner in the dogs. Following intravenous catheter insertion, blood sample was obtained for analysis, and lactated Ringer's solution (Vacoliter®, Baxter, Eczacibasi, Turkey), tranecsamic acid (Transamine®, Fako, Turkey) (10 mg/kg, IV) and prednisolone (Prednisolon Linz®,

İletişim (Correspondence)
☎ +90 224 2940841
✉ hsalci@uludag.edu.tr

Fako, Turkey) (4 mg/kg, IV) were administered to prevent possible internal hemorrhage and shock. Ampiciline sulbactam (Combisid® 1gr, Bilim Ilac, Turkey) (20 mg/kg, IV) and petidin HCl (Aldolan® ampoule 100 mg, Gerot Pharmacy, Austria) (5 mg/kg, IV) were given as antibiotic and analgesic drugs, respectively. After stabilization, thoracic and abdominal radiographs taken clearly demonstrated partially collapsed right lung lobes, mediastinal shift and open pneumothorax in case 1 *(Figure 1)* and diaphragmatic hernia, open pneumothorax and pneumoabdomen in case 2.

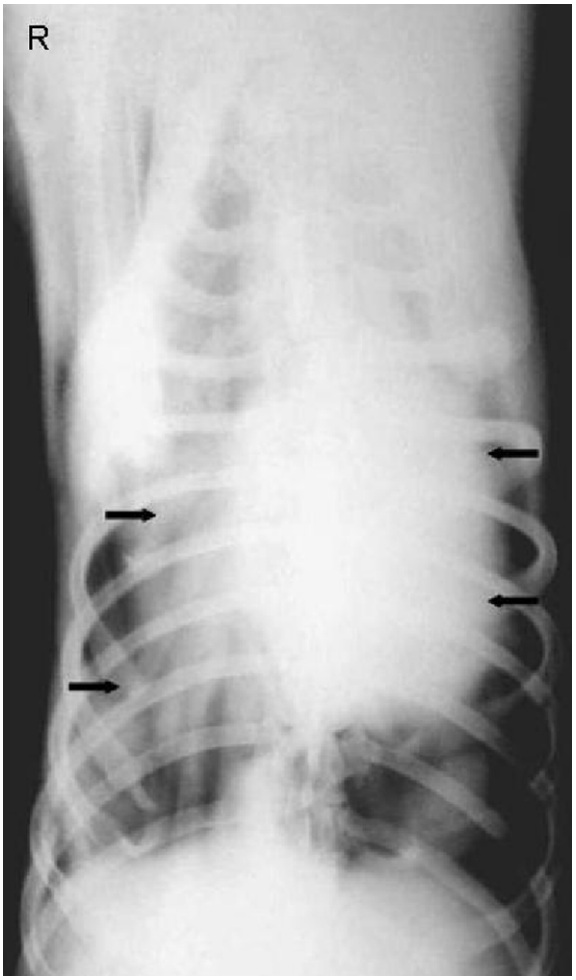

Fig 1. The preoperative radiogram shows partially collapsed right lung lobe on the right hemithorax (right arrows) and mediastinal shift (left arrows) in case 1. (R: right)

Şekil 1. Preoperatif radyogram, olgu 1'de sağ hemitoraksta parsiyal kollabe olmuş sağ akciğer lobunu (sağ oklar) ve mediasten kaymasını (sol oklar) göstermektedir. (R: sağ)

Taking the conditions of the dogs' into consideration, emergency surgery was decided. Isofluorane (Furane®, Abbott, UK) was used as general anesthetic agent after xylazine HCl (Alfazine® %2, Alfasan/Egevet, Turkey) (1 mg/kg, IM) and thiopental Na (Pentothal Na® 1 gr, Abbott, UK) (15 mg/kg, IV) administration. Respiration was ensured with mechanic ventilator, monitorization was provided by ECG, pulse oximeter and capnograph.

In case 1: Lateral thoracotomy was carried out and incisions were extended on the perforated thoracic wounds. Intrathoracic exploration revealed hemothorax, ruptured middle lung lobe and partial collapsed caudal lung lobe *(Figure 2)*. The middle lung lobe was removed (lobectomy), and the partially collapsed part of the caudal lung lobe was resected by wedge resection technique. Multiple pleural space lacerations and pericardial rupture were the other pathologies that were repaired with surgical suturing. The fractures on the ribs 5-7 were fixed with the cerclage wire, and thoracic incision was closed routinely.

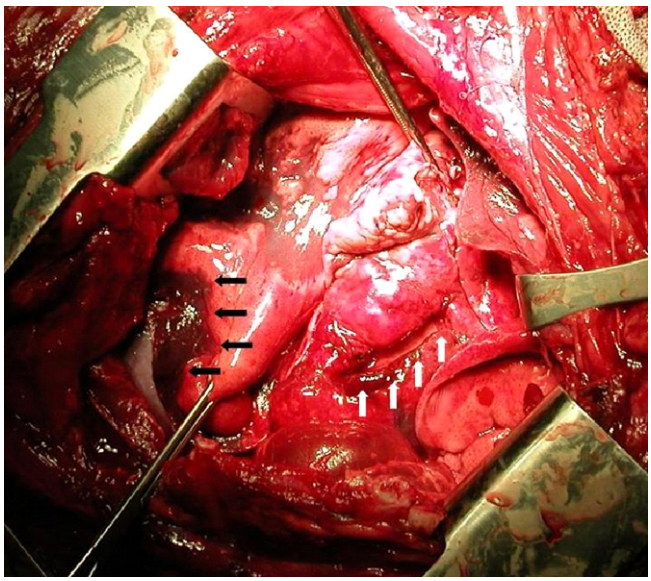

Fig 2. Perforated site (up arrows) of right middle lung lobe and collapsed apical site (left arrows) of right caudal lung lobe in case 1

Şekil 2. Olgu 1'de sağ orta akciğer lobunun perfore kısmını (yukarı oklar) ve sağ caudal akciğer lobunun kollabe olmuş apikal kısmı (sol oklar)

In case 2: The perforated wounds were explored through paramedian and paracostal incisions. Intra-abdominal exploration revealed hemoabdomen, caudal liver lobe rupture *(Figure 3)*, right pleural herniation of the small bowels and cranial liver lobes through right diaphragmatic rupture (diaphragmatic hernia). This ruptured caudal liver lobe was partially removed (partial lobectomy) and excision side of this lobe was omentalized with omentum major. Small bowels and cranial liver lobes were taken in situ, and diaphragmatic rupture was sutured routinely. Fractured 13th rib was fixed with wire suture. After intra-abdominal surgery, median sternotomy was performed.

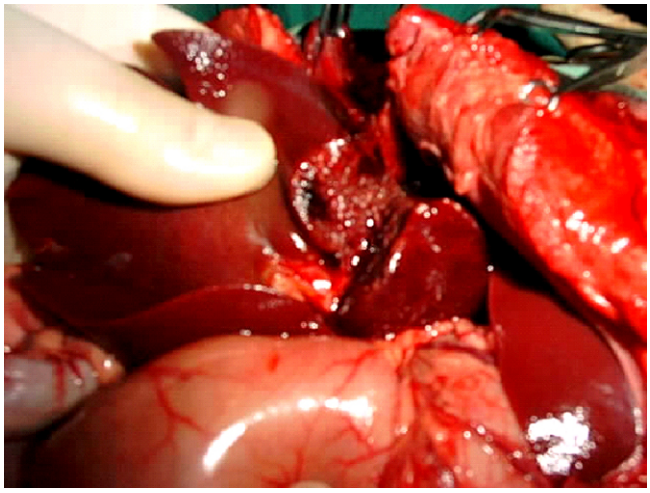

Fig 3. Ruptured side of the caudal liver lobe

Şekil 3. Kaudal karaciğer lobun yırtılmış kısmı

Intrathoracic exploration revealed rupture of right caudal and accessory lung lobes and parenchymal air leakage *(Figure 4)*. These lobes were removed with bilobectomy technique. Sternebreas and median sternotomy incision were sutured routinely.

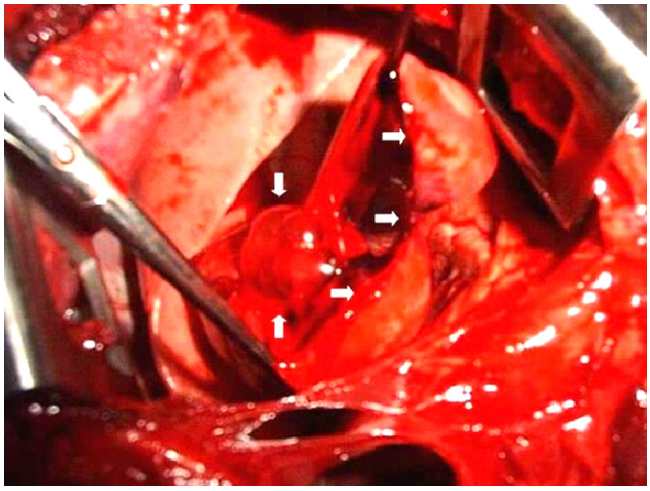

Fig 4. The view indicates the ruptured right accessory lung lobe (right arrows) and air leakage of perforated lung parenchyma in case 2 (up and down arrows)

Şekil 4. Görünüm, olgu 2'de yırtılmış sağ akciğer aksesor lobunu (sağ oklar) ve perfore olmuş akciğer paranşimini (yukarı ve aşağı oklar) belirtmektedir

A thoracostomy tube was inserted to pleural cavity of the dogs, and drainage was provided by Heimlich valve. Lactated Ringer's solution was infused and ampiciline sulbactam and petidin HCl were administered postoperatively. In addition, aminoacide (Procalamine®, Baxter-Eczacibasi-Turkey) and lipid (Liposyn®, Abbott, UK) solutions were infused as supportive therapy in case 2.

In the postoperative period, radiological evaluation of the dogs did not show any intrathoracic and intra-abdominal pathology on day 7 *(Figure 5)*. Thoracostomy tubes and skin sutures were removed postoperatively on day 5 and 7, respectively. Laboratory findings were within normal ranges on day 7 *(Table 1)*, and dogs were discharged at this day *(Figure 6)*. Communications with the dogs' owners at the end of 1st and 6th month revealed that dogs were healthy and had normal hunting performance.

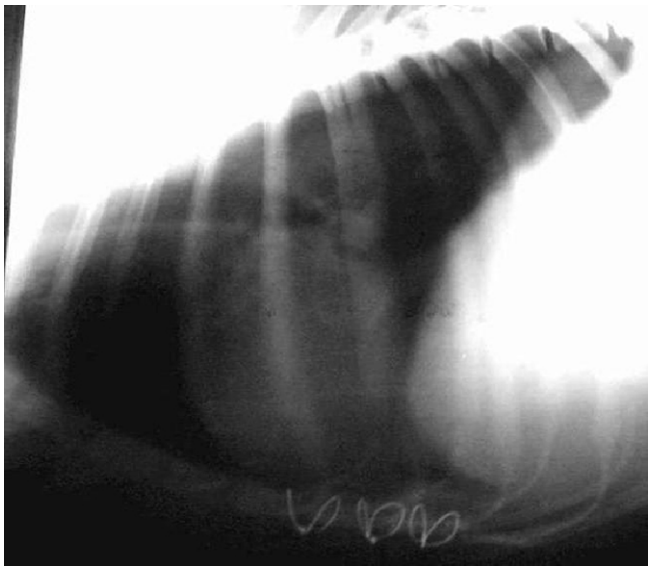

Fig 5. Lateral radiograph shows normal view of the thoracic structures and cercilage wire sutures of the sternebreas as a result of median sternotomy closure in case 2

Şekil 5. Lateral radyograf, olgu 2'de toraks yapılarının normal görünümünü ve median sternotomi kapatılması sonucu olan sternebralardaki serkilaj teli dikişlerini göstermektedir

Fig 6. Standing view of case 1, one week postoperatively

Şekil 6. Postoperatif 1 hafta sonra olgu 1'in ayakta görünümü

Tablo 1. *Olguların laboratuar bulguları*
Table 1. *Laboratory findings of the cases*

Parameter	Case 1		Case 2		Reference Ranges
	Preoperative	Postoperative on day 7	Preoperative	Postoperative on day 7	
WBC (x103/µl)	18.7	9.5	20.9	13.2	5.5-16.9
RBC (x10⁶/µl)	4.2	5.66	3.90	6.89	5.6-8.5
Hematocrit (%)	30.2	37.3	27.2	42.6	37-55
Neutrophils (%)	88	73	92	68	60-77
pO2 (mmHg)	71.2	90.1	74.3	93.3	90-100
pCO2 (mmHg)	47.5	38.2	45.6	37.5	36-44
pH	7.27	7.38	7.30	7.42	7.3-7.4
ALT (U/L)	-	-	36.4	39.3	10-88
AST (U/L)	-	-	47.2	49.5	10-88

DISCUSSION

Multiple thoracic and thoracoabdominal trauma pathologies have been encountered as a result of many different etiologies [1-4,10-13]. Wild boar attacks are occasionally encountered in dogs and they associate with multiple mortal pathologies which necessitate veterinary attention. Here, perforated thoracic and thoraco-abdominal wounds, intercostal space perforation, open pneumothorax, hemothorax, pericardial rupture, lung lobe ruptures, rib fractures, hemoabdomen, pancreas eventration, liver lobe rupture and diaphragmatic hernia resulted from wild boar attack in dogs.

Penetrated thoracic or abdominal traumas have mortal internal organ damages; therefore, dog with penetrated trauma should be taken to the operation following short assessment of life-threatening problem and stabilization [2,4-7,9,14,15]. In the presented dogs, penetrated wounds affected the intrathoracic and intraabdominal organs. Hence, emergency surgeries were decided in dogs following clinical and radiological examination and stabilization. Intra-abdominal and intrathoracic surgical techniques given were performed as reported previously [1,5-7]. In addition, as suggested in a literature [16], omentalization was used on the excision side of the liver to prevent the discharge in case 2, where suturing was impossible.

Postoperative care, radiological examinations, Heimlich valve drainage, and administration of medications (antibiotics, analgesics and fluids) were maintained as suggested in the literature [1,4-7,9,10,14,17]. When the clinical, radiological and laboratory findings were normal (on day 7), the dogs were discharged. At the end of 1st month and follow up periods, it was informed by owners that the dogs were healthy and had normal hunting performance.

As a conclusion, wild boar attack in dogs can result in multiple mortal pathologies in thorax and abdomen that should be treated with correct emergency surgery - procedures following clinical, radiological examinations and stabilization.

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