

SURGICAL MANAGEMENT OF GASTRIC PERFORATION DUE TO HIGH-RISE SYNDROME IN A DOG

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ABSTRACT

A two year old non descript bitch was presented to the Department of Veterinary Surgery and Radiology, Veterinary Clinical Complex, Rajiv Gandhi Institute of Veterinary Education and Research, Puducherry with a history of an accidental fall from the first floor of a building to the spiked metal railings of a gate onto the ground level. Physical examination revealed respiratory distress, pain on palpation around thoracic and abdomen region, perforating wound was noticed on the left lateral thorax at the level of 10th costal cartilage and animal was vomiting since then. On radiographic examination, a mild pneumothorax and gas filled air pockets were noticed in the abdomen, suspecting gastric perforation. Haematobiochemical values were within the normal range. Animal was stabilized by oxygen supplementation, IV fluids and analgesics. After stabilization, anaesthesia was achieved by Inj. Diazepam @ 0.5 mg/kg and Inj. Propofol @ 3 mg/kg IV. Exploratory laparotomy was performed to repair the perforating wound. Post operatively, antibiotics and analgesia were administered for 5 days along with fluid therapy. Based on history and clinical examination, the case was diagnosed as gastric perforation due to high rise syndrome and animal made an uneventful recovery.

Keywords: Dog, gastric perforation, high rise syndrome, thoracic injury and pneumothorax.

Received : 10.10.2022

Revised : 07.02.2023

Accepted : 28.02.2023

INTRODUCTION

High-rise syndrome (HRS) refers to the constellation of injuries sustained after falling from a certain height. Dogs and cats behave differently when falling from a height in that severity and life-threatening injuries

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were directly proportional to the height of the fall. The landing surface may play a significant role in the morbidity of cases of high-rise injury (Bonner *et al.*, 2012).

In addition, objects encountered during the fall may enhance or mitigate sustained trauma. Dogs landing on hard surfaces suffered more total injuries (Cohn and DuBose, 2010). In the present case, dog had fallen onto the spiked metal railings resulted in penetrating injuries in abdomen and thorax. The present case describes about the cardiopulmonary stabilization, radiographic evaluation and surgical management and postoperative care of HRS in a non descript bitch.

CASE HISTORY AND OBSERVATION

A two year old non descript bitch was presented to the Department of Veterinary Surgery and Radiology, Veterinary Clinical Complex, Rajiv Gandhi Institute of Veterinary Education and Research, Puducherry with a history of an accidentall fall from the first floor of a building to the spiked metal railings of a gate onto the ground level and vomiting since then. Physical examination revealed respiratory distress, pain on palpation around thoracic and abdomen region, penetrating wound was noticed on the left lateral thorax with protrusion of 10th rib (Fig 1). Thoracic auscultation revealed crackle sound indicating pneumothorax. Animal was stabilized by oxygen supplementation using 100 % flow-by oxygen, inj. dextrose normal saline @ 90

ml/kg i/v and inj. tramadol @ 4 mg/kg i/m was given prior to imaging. On radiographic examination, a mild pneumothorax with intact diaphragmatic border and gas filled air pockets were noticed in the abdomen, suspecting gastric perforation (Fig 2). Based on history, clinical and diagnostic examination, exploratory laparotomy was carried out.

TREATMENT

After initial stabilization, anaesthesia was achieved by administering diazepam @ 0.5 mg/kg and propofol @ 3 mg/kg intravenously and maintenance of anaesthesia was carried out with isoflurane inhalation anaesthesia. Under aseptic condition, the thoracic wound was debrided and protruded rib was anatomically repositioned and the torn muscles were sutured using simple continuous suture pattern using polyglactin size 1-0 (Fig 3). Subcutaneous and skin layer were closed routinely. Exploratory laparotomy was performed; perforation of stomach with mesenteric adhesions and mild laceration on the spleen was noticed. Gastrotomy wound was closed with cushing followed by lembert suture pattern using polyglactin 910 size 1- 0 and abdominal cavity was lavaged with 100 ml metronidazole solution, abdominal muscles, subcutaneous and skin were closed as per standard surgical procedure (Fig 4). Post operatively, animal was administered fluid therapy with dextrose normal saline @ 50 ml/kg/ day for 5 days. Cefotaxime @ 25 mg/kg b.wt IV twice daily (Prescriber's Digital Reference), Tramadol @ 2 mg/kg b.wt were

administered for 5 and 3 days, respectively. On 6th postoperative day, liquid diet was advised followed by semi solid diet. Wound dressing was done every alternate day such that any discharge encountered would be taken care however, no such complications occurred and sutures were removed on 10th post operative day and animal made an uneventful recovery.

RESULTS AND DISCUSSION

In HRS, clinical signs commonly encountered are head, thoracic, and extremity injuries but in the present case absence of head injury was noticed, however animal was in shock (Davenport and Brohi, 2016). Skeletal injuries are a major component with up to 50 % of animals sustaining at least one fracture or ligamentous injury (Liehmann *et al.*, 2012). In the present case, the injuries were limited to thoracic and abdominal region and animal presented with respiratory difficulty which could be due to hemorrhage, distributive shock secondary to massive tissue damage, or hypoxia. Cardiopulmonary stabilization was achieved through IV fluids and oxygen supplementation with adequate pain management animal was able to withstand the anaesthesia (Theusinger *et al.*, 2012). After recovery from anaesthesia, the animal showed no sign of intense pain with relieve from dyspnoea and normal ambulation was noticed after 24 hrs of surgery.

Penetrating wound caused by spiked metal railings damaged caudal lateral thorax

at the level of 10th costal cartilage eventually perforating the abdomen. Not much trauma was encountered in the thoracic region except for rib fracture with intact diaphragmatic border and advised complete rest, allowing the fractured bone to heal naturally. Gastric perforation was corrected at earliest so the peritonitis could be prevented and animal recovered more rapidly.

To conclude, overall prognosis of HRS is good and depends on the severity of injuries which is directly proportional to the number of floors. Pets that reside in urban areas are particularly predisposed to this condition and this is in accordance with Zaghoul and Samy (2018), were traumatic affections sustained by dogs that falling from windows or balconies of high-rise buildings in urban areas are at more risk. It appears to be an affection of young animals, due to the fact that they are more curious and more likely to explore, but all ages have been reported (Lapostolle *et al.*, 2005). Since, the animal was presented in a non ambulatory condition, stabilization with fluid therapy, preoxygenation and surgical correction of the affected parts made the case successful and early recovery.

ACKNOWLEDGEMENT

Authors are thankful to the Dean and Department of Veterinary Surgery and Radiology, Rajiv Gandhi Institute of Veterinary Education and Research, Puducherry, India, for providing all the facilities and permission to publish this article.



Fig 1: Penetrating wound on left lateral thorax with protrusion of 10th rib



Fig 3: Thoracic wound was debrided and protruded rib was anatomically repositioned

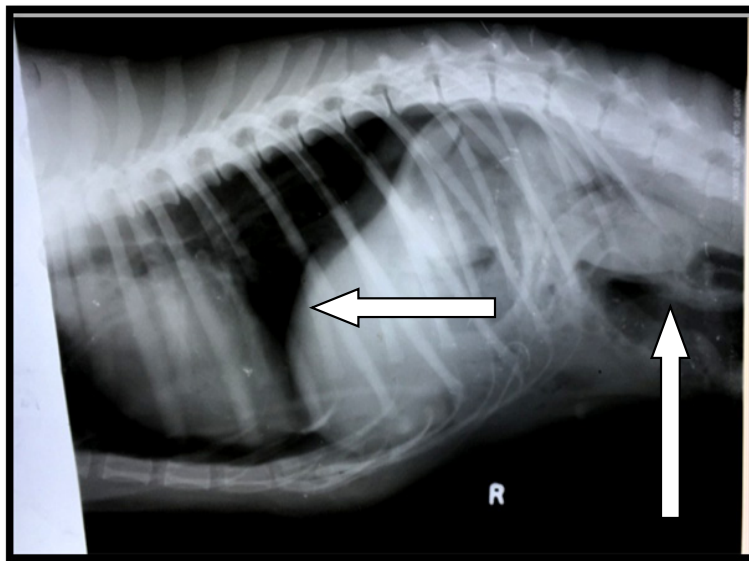


Fig 2: Radiographic examination - a mild pneumothorax with intact diaphragmatic border and gas filled air pockets were noticed in the abdomen

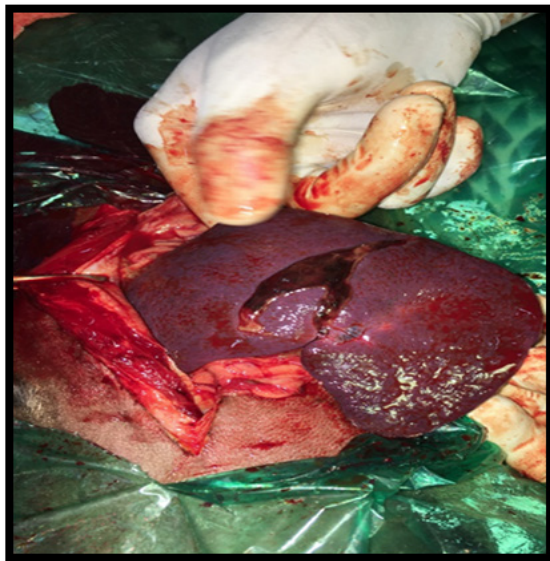


Fig 4: Gastric perforation and splenic laceration were corrected

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