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A Ragini
Assistant Professor, Department of Veterinary Medicine, Arawali Veterinary College, Sikar, Rajasthan, India

Balagoni Hanuman
Assistant Professor, Department of Veterinary Surgery and Radiology, Arawali Veterinary College, Sikar, Rajasthan, India

Anand VM
Veterinary Officer, Department of AHVS, Koppal, Govt. of Karnataka, India

Corresponding Author:
A Ragini
Assistant Professor, Department of Veterinary Medicine, Arawali Veterinary College, Sikar, Rajasthan, India

A case of vertebral fracture in a cat

A Ragini, Balagoni Hanuman and Anand VM

Abstract
A 2.5-year-old male domestic short hair cat was presented with paraplegia and abdominal distension. The cat had undergone automobile accident one hour before the hospital visit. The spinal cord injuries due to road accidents are very common in cats showing UMN or LMN signs depending upon the location of the injury. The detailed neurological examination and diagnostic tools like plain radiograph or myelography are required to know the neuroanatomical location of the injury. The plain radiographs are examined clearly for the injuries of both axial and appendicular skeleton because in cats the exogenous cause of spinal cord injuries may also have concomitant injuries involving the ribs, lungs and head etc. The prognosis depends upon the early recognition of injury, lesions and the extent of spinal cord damage along with secondary changes in the body of animals.

Keywords: Vertebral fracture, abdominal distension, cat

1. Introduction
Acute spinal diseases frequently appear as emergencies in general veterinary practise and are capable of fatal spinal cord injury and ensuing severe neurological impairments. There are two types of spinal cord injuries i) Endogenous spinal cord injury (ischemic spinal condition and intervertebral disc extrusion) and exogenous spinal cord injury (fracture, luxation or subluxation of vertebrae), ii) Primary spinal cord injury is a result of external or internal trauma which causes a spinal cord contusion (or) laceration [1]. This initial damage is exacerbated by a series of secondary processes including vascular and ion changes, inflammation and generation of free radical and the spinal cord's autoregulatory processes are hampered by vascular alterations combined with systemic hypotension brought on by the secondary injury in animals [2, 3]. The most common cause of spinal cord injury in cats is exogenous trauma i.e., road accident resulting in fracture or luxation or subluxation [4]. The complete physical examination including vitals, neurological examination to sort out life threatening issues and stabilize the animals because cats with spinal cord injury also have other injuries. The radiography of spinal cord or myelography are the useful diagnostic tools to locate the lesion but to assess the extent of damage in the spinal cord needs advanced imaging. [1]. Unfortunately, no medical treatment has yet been conclusively shown to be effective in either humans or animals but in humans, methyl prednisolone is used for atleast 6-7 weeks to enhance the motor function [5, 6]. The LMN signs in hindlimbs and bladder along with lack of nociception in grade 5 spinal cord injury are the grave prognostic indicators in cats [7, 8]. This case report describes the vertebral fracture (T_{12}) in a cat.

Case description
A 2.5-year-old domestic short hair male cat was presented with lethargy, paraplegia, severe pain at thoracolumbar region and abdominal distension (Fig.1). The cat met with an accident and immediately the owner noticed the hind limb ataxia and started showing pain response at thoracic spine. The vitals check results were 102.1 °F temperature, tachycardia and tachypnoea because of severe pain. The physical examination revealed swelling and fracture fragments were felt at last two thoracic vertebrae and cat elicited pain response on palpation at the thoracolumbar area. The abdomen was bulged, especially the urinary bladder wall was tensed and severely distended resulting in urinary and faecal incontinence. The neurological examination revealed reduced cutaneous trunci reflex, LMN hind limb with absence of deep

pain reflex. Anal reflex and tonicity of tail were absent. Radiographic examination of thoracolumbar spine revealed compression fracture of T_{12} (Fig 2). Serosal detail of abdomen was satisfactory and showed fully distended urinary bladder occupying almost half of the abdomen. Colon was distended with faeces and pressed dorsally by urinary bladder. Cat was prepared for urinary catheterization to relieve urinary bladder tension. Catheterization was unsuccessful in draining urinary bladder. Repeated abdominal palpation revealed no palpable bladder and it was cool to touch. Second radiograph of abdomen revealed reduced serosal detail without urinary bladder demarcation (Fig 3). Poor prognosis was explained to owner. Animal collapsed on the same day before starting treatment.

Discussion

The spinal cord injuries due to the exogenous cause like road accidents, cat fight, fall from heights and bite wounds are common [9]. Nearly 30-80% of the cats have concomitant injuries to lungs like pneumothorax, haemothorax, rib fractures, trauma to the other parts of the body and secondary changes like inflammation, vascular abnormalities along with systemic hypotension [9]. The localization of vertebral fracture in cats can be done easily with neurological examination and plain radiography (10). However, the myelography, CT and MRI scans have greater sensitivity than plain radiographs of spinal cord injuries in animals [10]. The thoracolumbar vertebral junction fractures account for about 50% followed by lumbar 30%, 15-20% sacrococcygeal and 2% cervical vertebra in cats [11]. Generally, the cats with thoracolumbar vertebral fracture have reduced reflexes of hind limb, urinary, faecal incontinence, paraplegia, absence of anal reflex and reduction or lack of nociception depending upon the grade of spinal cord injury [7]. There are 5 grades of spinal cord injuries in which the paraplegia with normal to lack of nociception is observed in grade 3, 4 and 5 [12]. The prognosis of grade 1-4 spinal cord injuries is good if the lesions are recognised earlier and poor to grave prognosis in grade 5 [12]. The treatment with methyl prednisolone can be effective in improving the clinical signs in humans but not in animals [6].

Fig 1: Domestic short hair cat with spinal cord injury

Fig 2: Lateral radiograph showing compression fracture of T-12 and distended urinary bladder

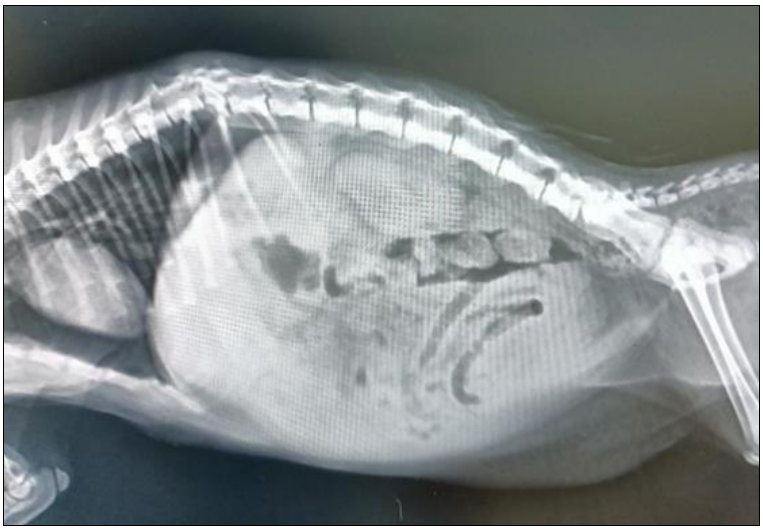

Fig 3: Reduced serosal detail with loss of urinary bladder demarcation

Conclusion

- Exogenous trauma like road accident is the most common cause of vertebral fracture in cats.
- To assess the clinical signs of spinal cord trauma, thorough neurological examination should be done.
- To evaluate the location of lesion radiographic imaging or myelography are required.
- The outcome of spinal cord injury is poor if there is lack of nociception and paraplegia in animals.

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