OCCURRENCE, CLINICAL AND RADIOGRAPHIC STUDY OF HINDQUARTER WEAKNESS IN DOGS


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ABSTRACT

The study was conducted on the clinical cases of neuromuscular disorders in hind quarter in dogs reported at IVRI Polyclinic, Izatnagar (U.P). The cases of hind quarter weakness were selected from the cases of neuromuscular disorders and classified in to groups I (Animals with hindquarter weakness, which could stand, and had staggering gait and intact pain sensation), II (Animals with hind quarter paresis, which were unable to stand and dragged hind legs while walking with intact pain sensation) and III (Hindquarter paralysis with absence of pain sensation) on the basis of history, clinical signs, radiographic and neurological examination. Various radiographic features were also recorded.

Key words: Clinical findings, Occurrence, Radiological findings.

Hindquarter weakness are developed due to spinal cord related problems which are frequently reported in veterinary practice. Spinal cord gives rise to 35-38 pairs of spinal nerves in canine. Each spinal nerve has two branches, the dorsal and ventral. Trauma is the most frequent cause of spinal cord injuries (Berg and Boudrieau, 1992). Spinal cord lesions usually cause paralysis with altered reflexes and sensation and affect the limbs bilaterally or occasionally hemilaterally. Disease can directly or indirectly stimulate pain sensors (nociceptors). Inflammatory diseases may hypersensitize these receptors or nociceptive pathways with inflammatory mediated substances such as serotonin histamine and potassium. Diseases resulting in mechanical compression of nociceptors or nociceptive pathways may also result in hindquarter weakness, pain and paresis (Webb, 2003). The present paper deals with the incidence of hindquarter weakness and their clinical and radiological findings in dogs.

A total of seventy two clinical cases, comprising of 32 animals each in group I and II and 8 animals in group III were included in the study. History of the case was collected regarding age, breed and sex of the animal, duration of illness etc. The data were tabulated, analyzed and different correlation were studied. The animals were evaluated on the basis of history, clinical signs, radiographic and neurological examination and classified in to Group I: Animals with hindquarter weakness, which could stand, and had staggering gait and intact pain sensation, Group II: Animals with hindquarter paresis, which were unable to stand and dragged hind legs while walking with intact pain sensation and Group III: Hindquarter paralysis with absence of pain sensation.

Out of 630 cases of dogs, 92 (14.6%) were of neuromuscular disorders which comprised of 34 cases of hindquarter weakness (36.95%), 39 cases of posterior paresis (42.39%), 10 cases of paralysis (10.86%), 2 cases of torticollis (2.17%) and 7 cases of myoclonus a sequelae to canine distemper (7.60%).

A total of 72 cases of neuromuscular disorders excluding the cases of torticollis and myoclonus were recorded. The occurrence was more in nondescript dogs (28) followed by Spitz (18) in small breeds, German Shepherded (10) in large breeds. The maximum cases (32) were recorded in the age group of 1-4 years followed by more than 4 years (28) and less than 1 year (12). Males (41) were more affected than females (31).

High incidence recorded in the age of 1-4 years in animals of all groups. In this age animals are highly active and had tendency in fighting,
jumping and running which aggravate more damage of spinal cord and its associated structures. High incidence recorded in descrips dogs such as Spitz followed by German shepherd and Doberman might be due to high population in the region. In descrips breeds, large number of spitz presented with paresis might be due to metabolically more active and is supported by the findings of Richard et al. (1991). Degenerative lumbosacral stenosis in males are more than the females (Ness, 1994), however, intervertebral disc diseases in females are more as compared to males and Dachshund breeds are highly affected (Sukhiani et al., 1996).

**Clinical signs**

Out of 32 animals of group I, 18 dogs (56.25%) developed sudden episodes of hindquarter weakness following a jump or while climbing stairs, tussling with the dogs or during breeding. The dogs exhibited symptoms of pain as manifested by kyphosis or arching of back with or without protrusion of penis. Seventy per cent of animals had pain and anxiety and were awake frequently during the night, and also cried while getting up. The duration of illness was 10-30 days (19.08±1.98) in 68.75% animals followed by less than 10 days in 18.75% and more than 30 days in 12.5% of animals of group I. This higher duration of illness probably due to deterioration in the conditions of the animals with continuous weight bearing on the limb and walk with slight difficulty.

Nineteen animals out of 32 cases of posterior paresis had hindquarter weakness at initial stages, condition in such cases deteriorated after 5-10 days and in some cases after one month in spite of conventional treatment. The number of hind quarter weakness (back pain) cases was less than posterior paresis as observed in the animals of group II. The finding was supported by Brown et al.(1977) that 80% dogs those suffered from posterior paresis, chronically had previous episode of back pain, possibly reflected the tendency for dogs without neurological deficit to be treated for a longer period before being referred for further diagnostic procedure or surgery. The duration of illness varied from 1 day to 20 days (6.06±0.68).

Eighteen dogs presented with paresis with pain had spasticity of limb and showed exaggerated reflexes and increase pain sensation. The two dogs had urine retention and faecal retention. Urine retention might be due to inability of dog to make the posture to urinate (Janssens, 1983). It is also explainable by fact that damage of upper motor neurons resulting in paralysis of detrusor muscle and contraction of sphincter of bladder (Lexmaulova et al.2008). Further, 14 animals with hypotonic paresis had normal urination and defecation.

The animals of group III were mainly of severe spinal cord injury with absence of pain sensation. All the cases had flaccid paralysis and placed their hind limb behind the body. The animals of this group had depression and incontinence of urine and faeces. The duration of illness varied from 1-10 days (4.25±1.06) which may be due to prompt attention of the owner. The duration of illness was reported an average of 18 days by Janssens (1983).

**Radiological examination**

All the cases were subjected to plain radiography. Survey radiography of the vertebral columns was evaluated for evidence of spinal abnormalities (Tooms and Baur, 1993).

The radiological observation of animals of group I revealed that there was no skeletal abnormality (43.75%) followed by spondylitis (37.50%), compression fracture (9.37%) and intervertebral disc protrusion (9.37%).

The radiological observation of animals of group II revealed that no skeletal abnormality (46.87%) followed by compression fracture (34.37%), intervertebral disc protrusion (12.50%) and spondylitis (6.25%).Out of 11 cases of fracture and compression ,6 cases had lesion in thoracic region at different segment at T6-T7,T8,T9,T11,T12 and T13(2),whereas, in five cases the lesion was present in the lumbar region at L2(2),L4(1),L5(1) and L7(1).The intervertebral disc protrusion was observed between T5-T6(2),T7-L1 and L1-L2(1) and L2-L3. Spondylitis was observed in 2 cases involving the lumbar area.

The radiograph of the group III revealed no skeletal abnormality in 4 cases (50%) followed by compression fracture in three cases (37.50%) and spondylitis in one case (12.5%). The severity of damage in group III was more. The animals which remained untreated for more than 24 hours rarely recovered. Spondylitis deformance and related
conditions may produce bony projection dorsally (Osteophyte formation) as well as ventrally. The chemical mediators of inflammation such as bradykinin and substance P can inflame the nerve roots and subsequently damage the spinal roots (Wheeler and Thomas, 1996). The few cases of intervertebral disc protrusion were reported in all the groups might be due to degeneration of intervertebral disc which is associated with a loss of water from nucleus pulposus and lowering of the proteoglycan concentration (Pearce et al., 1987). Fracture compression and intervertebral disc protrusion are interrelated to each other. Hoerlein (1971) reported that trauma into vertebral column may result to both condition.

On the basis of above finding it is concluded that most of dogs in the age of 1-4 years and were non-descript. The clinical signs and radiographic features showed a variable changes irrespective of neuromuscular problem. Hence early detection of neurological deficit in hindquarter is helpful in the effective management of neuromuscular disorder.

REFERENCES


