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Suzanne Robinson
Iowa State University

C. B. Chastain
Iowa State University

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Polyradiculoneuritis:  
(A Case Study)  

by
Suzanne Robinson*
Dr. C. B. Chastain†

Summary

Polyradiculoneuritis (coon hound paralysis) is an ascending paralysis which occurs primarily in dogs used for hunting raccoons or in dogs which are free to roam with the opportunity of coming in contact with a raccoon. Although it is characterized by quadraplegia of the affected animal persisting for three weeks to three months, complete recovery is possible. Early detection of this syndrome is a very important aspect in shortening the recovery time.

Discussion

The exact etiological agent involved in coon hound paralysis has not conclusively been identified, but most histories include traumatic contact with a raccoon. It is postulated that the bite or scratch from the raccoon serves as an antigenic stimulus that triggers an immunological disturbance that damages Schwann cells. In cases where there is no definite proof of a fight between the dog and a raccoon, the environment of the dog and physical evidence of a fight are considered significant. Earlier theories of etiological agents included botulism, some other foodborne intoxication, or spinal trauma incurred in the treeing of raccoons. The purpose of this report is to present the clinical signs, treatment, and prognosis of a case of polyradiculoneuritis in an Iowa dog.

On October 30, 1972, a female German Shepherd dog was presented to the Stange Memorial Clinic exhibiting quadraparesis. Corticosteroids had been administered by the local veterinarian, but since she was non-ambulatory after one week, she was referred to the Iowa State University College of Veterinary Medicine. Upon admission she was alert and able to wag her tail. There was evidence of scars about the head and neck suggesting the possibility of a recent fight. Although the exact cause of the scars were unknown, she had been free to roam in a wooded, marshy area. A neurologic examination was performed and revealed areflexia of the patellar, toe pinch, triceps, and extensor thrust reflexes. On the basis of clinical signs, history of a progressing paralysis, and no evidence of tick infestation, a tentative diagnosis of polyradiculoneuritis was made.

Tick paralysis is a quadraplegia due to the neurotoxin released by the common wood tick, Dermacentor variabilis. The symptoms of tick paralysis vary from an incoordinated gait to a complete flaccid paralysis. Recovery is rapid, usually within 24 to 72 hours after the toxin-producing, gravid tick or ticks have been removed.

The dog remained alert and maintained a normal appetite. She did maintain normal muscle tone in her neck and was always able to wag her tail. In very severe cases the neck muscles are flabby and the tail is limp. An elevated temperature persisted for a week after the dog was admitted, but this is not a constant sign. The dog's voice was weak, and there was a peculiar change in her bark. Neurotrophic changes eventually caused a muscle wasting and severe weight loss. The severity of motor loss was much greater than the sensory loss, and the muscles of the limbs were more severely involved than the muscles of the trunk.

Clinical pathology revealed little of significance. The hematologic findings, urinalysis, and cerebral spinal fluid analysis were unremarkable. In some cases, however, cerebral spinal fluid pressure may be increased.

* Mrs. Robinson is a fourth year student in the College of Veterinary Medicine, Iowa State University.
† Dr. Chastain is an Assistant Professor in the Department of Veterinary Clinical Sciences, College of Veterinary Medicine, Iowa State University.
Treatment

The treatment in this case was mostly supportive. Dexamethasone at the dosage level of one-tenth milligram per pound of body weight, and procaine penicillin G in dihydrostreptomycin sulfate solution was administered intramuscularly once daily for the first six days. The corticosteroid, by means of its anti-inflammatory action, decreases the swelling of the spinal cord and thereby lessens the spinal damage. This therapy was used to determine the extent of the spinal damage. If the damage is slight, some response is expected within a few days of the treatment, thereby indicating a shorter period of recumbancy. However, in this case there was no response, indicating that she would remain down for an extended period of time.

Although the dog's appetite was good, she was unable to sit up or even support weight on her sternum. Support was required in order for her to raise her head to eat. The dog was maintained on a soft, rubber pad in the cage and turned several times daily. However, she still developed severe decubital ulcers on the trochanters of the femurs and on the acromiums of the scapulas. These wounds were irrigated with three per cent hydrogen peroxide and dressed with nitrofurazone ointment three times each week. Occasionally there is retention of feces and urine which must be relieved by soap and water enemas and catheterization. In this case the dog did not retain urine or feces, but frequent urinalyses were run to assure that cystitis was not developing due to some urine stasis.

Hydrotherapy or physical therapy has been recommended to stimulate appendicular musculature. The dog was placed in a sling twice daily for approximately two hours. While in the sling she became able to hold her head erect, but her legs hung limply. Hydrotherapy was used occasionally.

It was one month before any significant improvement was noted. Her front limbs showed some tone, but they could not bear any weight. One week later she had improved so that with assistance in getting up she was able to hold her body in a sitting position. At this time her hind limbs began to show some tone, but it was another two weeks before she could stand or crawl across the floor. The degree of muscle atrophy and weight loss was severe, but slowly this improved: Two months after she was admitted, the dog was finally able to walk, if she was given assistance in gaining a standing position.

The duration of the paralysis varies from three to six weeks in most cases. Some cases have been recorded as taking up to six months for recovery. The time at which the syndrome is identified and diagnosed is the crucial factor in the time required for recovery. Once the dog has recovered, relapses from the previous episode do not occur, although the same dog may suffer repeated attacks of this syndrome after subsequent fights with a raccoon. The prognosis for this case is now excellent, provided there are no further exposures to raccoons.

BIBLIOGRAPHY