1974

Acute nephritis in the canine Due to Leptospirosis (A Case Report)

Randall D. Broberg
Iowa State University

Robert W. Carithers
Iowa State University

Follow this and additional works at: https://lib.dr.iastate.edu/iowastate_veterinarian

Part of the Nephrology Commons, and the Veterinary Pathology and Pathobiology Commons

Recommended Citation
Available at: https://lib.dr.iastate.edu/iowastate_veterinarian/vol36/iss2/6

This Article is brought to you for free and open access by the Journals at Iowa State University Digital Repository. It has been accepted for inclusion in Iowa State University Veterinarian by an authorized editor of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
Acute Nephritis in the Canine Due to Leptospirosis (A Case Report)

by
Randall D. Broberg *
and
Robert W. Carithers, D.V.M., Ph.D. †

Summary

The case report presented demonstrates the protean nature of leptospirosis and the absolute dependence on either cultural or serological evidence of the disease for definitive diagnosis.

Discussion

On Aug. 22, 1973, a one-and-a-half-year-old male Sheltie Collie was brought to the Iowa State University veterinary clinic showing depression, anorexia, vomiting, and a temperature of 101.2° F. The dog had been vaccinated with a distemper-hepatitis vaccine on Aug. 20. On Aug. 21, a fecal examination showed an Ancylostoma infection. This was a chronic infection which had first been diagnosed on Dec. 28, 1972, and had been treated twice prior to this with disophenol. A physical examination showed the dog to have a mild tonsillitis, enlarged anal glands which were expressed at that time, pain upon abdominal palpation, mild dehydration, along with the general depression noted in the initial examination. From these signs a differential diagnosis was established as shown in table I.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Differential Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>General depression</td>
<td>intestinal parasites, gastritis, enteritis</td>
</tr>
<tr>
<td>Depressed appetite</td>
<td>gastrointestinal foreign body, intestinal parasites, gastritis</td>
</tr>
</tbody>
</table>

Blood was drawn for a routine blood workup on Aug. 22. This showed an elevated BUN which was supportive of a nephritis. Initial therapy was directed towards this condition. Five hundred ml. of lactated Ringers solution were given intravenously to attain normal hydration and to begin to flush the kidneys. This was accompanied by two ml. of B Sol † subcutaneously. On Aug. 23, the temperature was 100.0° F.; the dog was of normal hydration, had urinated in the cage, and had a full gladder. Another 500 ml. of lactated Ringers were given intravenously along with one ml. of B Sol † subcutaneously, one ml. of gentamicin intramuscularly, and three ml. of Visorbin † orally. The dog was also put on a ration of K/D. 2 On Aug. 24, the dog's condition had deteriorated considerably. He had a dull coat, pale mucus membranes, blood on the thermometer, but still a temperature of 100.4° F. Two hundred and fifty ml. of lactated Ringers, one ml. of gentamicin and one ml. of B Sol † were administered in the morning and the lactated Ringers and gentamicin repeated in the afternoon. On Aug. 25, the dog was much improved, was not dehydrated, and the BUN was now down to 29. The fluid therapy was discontinued but the genta-

---

* Mr. Broberg is a fourth year student in the College of Veterinary Medicine, Iowa State University.
† Dr. Carithers is an Assistant Professor in Veterinary Clinical Sciences, Iowa State University.

Visorbin is a vitamin-iron preparation with sorbitol, produced by Norden Laboratories, Lincoln, Nebr. 68501.

K/D is prescription diet produced by Hill's Division of Riviana Foods, Inc. Topeka, Kansas, 66601.
micin b.i.d. and B. Sol s.i.d. were both continued for three more days at which time the dog was dismissed from the hospital.

The dog was readmitted on Sept. 13 for an examination and a disophenol treatment. At this time the dog appeared normal, had a temperature of 103.5° F., and the owner reported no vomiting or other signs of illness, so the disophenol was given. Urine samples and blood samples were also drawn at this time and again on Nov. 19 for determination of blood parameters and for leptospirosis serology.

Results of all the blood work and urinalyses on this dog were rather unrevealing except for the BUN as mentioned previously and as shown in table II.

| TABLE II. | Dates 8/22 8/23 8/24 8/27 9/13 11/9 | BUN (mg./100ml.) 145 87 29 22 23 24 |

Perhaps even more significant was the four-fold increase in L. pomona titer between the acute and convalescent stages of the disease. The results of serology are listed in table III. The serological pattern deserves some further explanation. One can only hypothesize as to the reasons for the titer to L. canicola but the most likely reason is that the dog did have a previous infection with that organism, although not a clinical one. This is not an unusual finding in view of the fact that it is estimated that 11 to 38 per cent of the canine population in the United States has been infected with the organism but do not develop clinical signs. The titer to L. icterohemorrhagica is probably best explained by considering the limitations of the test used to detect these antibodies—the microscopic agglutination test. Some of the reported limitations of this test are that it results in lower titers in general and yields a broader pattern of cross-reactions.

As exemplified by this case, not every dog with leptospirosis shows all the classical signs of the disease. Some of the salient features pointed out by this case include the elevated BUN, vomiting, depression, anorexia, abdominal pain, and mild tonsillitis. But even with this many concurrent signs, a diagnosis could not be made until the serological results on paired serum samples were obtained. This patient also shows an ideal recovery in the way the BUN dropped steadily from 143 to normal. A good prognosis in this instance is further substantiated by the drop in antibody titer by three months post infection giving an indication that the organisms have been cleared from the animal. The fact that the organisms were apparently cleared from the dog suggests another point about this case. It is most commonly recommended that known cases of leptospirosis be treated with high levels of penicillin and streptomycin to assure elimination of the shedder state, but in this case we seem to have achieved shedder elimination with gentamicin.

Public Health Significance

Accurate diagnosis of leptospirosis, although not critical to the treatment of the nephritic animal, is of public health significance to you and to the owner. In 1970, 52 cases of human leptospirosis from 17 states were reported to the Center for Disease Control. A probable source of infection was noted in 29 of these cases. Nine (or 31 per cent) were attributed to dogs. This figure compares favorably with those found in 1969 when 19 per cent of 43 confirmed cases were found to be associated with dogs. Leptospirosis in man appears to be associated with occupational exposure. Sewer workers, butchers, miners, ditchdiggers, longshoremen, and others working in rat infected areas are often exposed to the organism; but leptospiral infections also tend to be more common in veterinarians, animal handlers, dog breeders, and dog owners. Therefore veterinarians should take the necessary sanitary precautions when dealing with a nephritic animal just in case it has Leptospirosis. Also, it is our duty to find to the best of our ability the specific etiology of an acute nephritis so that if it is due to
leptospires, the clients can be properly warned of the danger to which they may have been exposed. Occasionally farm dogs may become infected by contact with other livestock, tipping the veterinarian off as to the cause of reproductive problems, such as in a herd of swine. And, as pointed out in this particular case, specific diagnosis of leptospirosis is next to impossible without the application of serology and/or culturing of the organism.

Bibliography