CANICOLA FEVER SIMULATING POLIOMYELITIS

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The subject of canicola fever—human infection with *Leptospira canicola*, a spirochaetal parasite of dogs—was fully reviewed by Broom (1951), who concluded that, although 15 to 20 cases were recognized annually in Great Britain, the incidence was probably higher. The clinical manifestations of these infections are protean, but symptoms of mild meningeal irritation are a feature of a large number of cases and, in the absence of specific investigation, these cases may be labelled poliomyelitis (Alston and Broom, 1949; Chesney, 1951).

Since 1948 at least four cases of canicola fever have been encountered in the Royal Free Hospital, but, although a canine source was suspected in all, examination of the dog has been possible in only the last case. All four cases presented in a similar fashion, with headache, pains in the back and limbs, pyrexia, vomiting and signs of meningeal irritation, a mild degree of nephritis, and injection of the conjunctivae; in three of them the latter feature, unusual in poliomyelitis, prompted further inquiry. Examination of the cerebrospinal fluid in all four cases revealed a pleocytosis of the lymphocytic type, with counts of 1,260, 450, 52, and 9 cells per c.mm. respectively. The corresponding protein levels were 90, 100, 90, and 50 mg. per 100 ml. Excess globulin was present in all instances. The pleocytosis shows a rough parallelism with the protein level, thus providing a point of distinction with poliomyelitis, in which the protein increase is often delayed to the second and later weeks, when the cells are decreasing or have returned to normal levels. The sugar and chloride levels were within normal limits. The blood serum agglutination titres to *L. canicola* were 1:10,000; 1:300,000; 1:10,000; and 1:3,000 (rising titre demonstrated). There was no significant rise of antibody to *Salm. typhi*, *Salm. paratyphi B*, *Brucella abortus*, and *Comp. salmonella*.

In the fourth case there was a clear history that the patient's dog had suffered from recurrent enteritis since puppyhood. The animal was sacrificed, and the report on the post-mortem and histological findings showed the typical lesions associated with canicola infection in dogs (McIntyre and Montgomery, 1952).

Discussion

Leptospirosis should be considered in all cases presenting with signs of meningeal involvement and with C.S.F. changes showing pleocytosis of the lymphocytic type and a rise in protein and normal sugar and chloride levels. If, in addition, there is evidence of nephritis and conjunctivitis, the probability of canicola infection is heightened and appropriate special investigations should be undertaken. These consist primarily in the examination of "paired sera" (taken at an interval of 10 to 14 days) for the detection of a rising titre of antibody to leptospiral organisms. It is important to note, however, that in the early stages of leptospirosis a patient's serum may react with more than one species of *Leptospira*. Gispén and Schuffner (1939) found that the titre against the infecting species might be lower than the titre for a related serological type. This "paradoxical reaction" (Fühner, 1951) may lead to errors in diagnosis, as occurred in a case described by O'Connell and Broom (1952). The serum of any suspect dog should always be examined, and in this connexion it should be remembered that healthy dogs, including untrained puppies, may be symptomless carriers, which are a particularly likely source of infection for humans. As in Weil's disease,

bathing in infected pools has been shown to be a source of infection; freshwater pools should therefore be protected from both rat and dog contamination and the water chlorinated to destroy any leptospires which may gain access (Broom, 1951).

Although the disease in the dog may run an acute course with ulceration and necrosis of the tongue and buccal mucosa, ending fatally from acute uraemia in 36 to 96 hours, usually it takes a mild form with vague symptoms suggestive of renal damage, but there may be no overt signs of illness (Joshua, 1950). Histological examination of the kidneys of healthy carrier dogs shows an interstitial nephritis, apparently progressive, which many veterinary surgeons believe to be the cause of chronic nephritis so common in older dogs (Broom, 1951). The condition in the dog responds to treatment with penicillin (Joshua and Freak, 1947) but Brunner and Meyer (1949) showed that the antibiotic did not eliminate the leptospires from the kidney and that dogs so treated continued to shed the organisms in the urine. They found that a subsequent course of streptomycin in doses of 40 mg. per kg. body weight daily for four days effectively terminated the carrier state.

As the disease in the human usually runs a benign course, treatment is not essential and in two of our cases no specific therapy was given. One case received 2 mega units of penicillin daily for six days and made an uneventful recovery, but the inability of the drug to pass the blood-brain barrier in effective concentration renders it unsuitable for cases with meningeal involvement. In the remaining case marked deterioration in the general condition, with increase of meningism and rise of temperature on the eighth day of illness, made some form of specific therapy imperative. The administration of 1 g. of chloramphenicol four-hourly up to a total of 41 g. ensured prompt resolution of pyrexia and uneventful recovery. In the treatment of experimental canicola fever Uhlenhuth and Schoenherr (1951) found chlortetracycline ("aureomycin") and oxytetracycline ("terramycin") effective but thought chloramphenicol had no value. Whitehouse (1952) also considered chlortetracycline had definite antileptospiral activity in human infections. Hall *et al.* (1951) came to the conclusion that none of the antibiotics they used, including chloramphenicol, were effective even when administered early in the course of the disease.

Summary

Four cases of canicola fever simulating poliomyelitis were observed in North London during the period 1948–54.

The presence of mild conjunctivitis and nephritis accompanying symptoms of meningitis is suggestive of canicola fever. Investigations include agglutination tests on "paired sera" from the patient and suspected dogs.

Although chloramphenicol appeared to bring about a marked improvement in one case there is no convincing evidence that any antibiotic is specific, and a further search for a satisfactory agent is indicated.

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