

PARKLAND MEMORIAL HOSPITAL
MEDICAL GRAND ROUNDS
APRIL 17, 1958

LEPTOSPIROSIS

Case 1, [REDACTED] 62 WM [REDACTED] (Case 6, Table 1)

Hospitalized [REDACTED] 1954, 5 days after abrupt onset of chills, fever (105°F.), headache (bitemporal, dull, aching, and sometimes throbbing), myalgia, arthralgia and malaise. He had taken antipyretics but no antibiotics. There had been exposure to cats, horses and squirrels in the month preceding illness, but no contact with rats, mice, or stagnant water.

He appeared acutely ill, with T. 99.6°F., pulse 112, BP 130/70. There was no conjunctival injection, nuchal rigidity, or rash.

Hb. 13.5 gm %, ESR 35 mm/hr., WBC 8,500 and neutrophils 97%. Urine normal. BUN 42 mg. %, CO₂ 24 mEq/l, alkaline phosphatase 7.7 Bodansky units, other liver function tests normal.

There was defervescence and symptomatic improvement on the 7th day of illness. The diagnosis of leptospirosis was first suspected on the 9th day when conjunctival suffusion was noted and history of photophobia was elicited. The CSF on the 11th day contained 180 cells/ cu. mm. (66% PMN), with protein 66 mg. % and sugar 59 mg. %. The BUN returned to normal promptly and on the 15th day of illness his PSP was 20% in 15 minutes.

Agglutination-lysis test revealed rising titers for *L. grippityphosa* (0 to 1:3200) and *L. autumnalis* A (1:100 to 1:3200).

Case 2, [REDACTED] 30 WM [REDACTED] (Case 3, Table 1)

Hospitalized [REDACTED]-57 with an illness which began rather insidiously 4 days prior to admission with generalized myalgia, headache, fever and slight nausea. He was given penicillin from the first day of illness but did not improve. He had waded through stagnant water but had no contact with animals.

T. 104.4°F., pulse 100, BP 130/80. There was conjunctival suffusion and mild nuchal rigidity but no rash or icterus.

WBC 6,800 with 85% neutrophils, Hb. 14.6 gm., ESR 35 mm./hr. Urinalysis protein 1 plus, and 10-20 WBC and numerous hyaline and granular casts per HPF.

CSF normal on admission. Defervescence and symptomatic improvement occurred on the 6th day of illness but headache and nuchal rigidity persisted. In the early morning of the 7th day he awakened with an intense headache and increased conjunctival injection. At 4:30 PM on the 7th day lumbar puncture revealed pressure of 220 mm. of fluid, 288 cells/ cu. mm. (75% PMN) and protein 140 mg. %.

He was asymptomatic after the 9th day but pleocytosis persisted until the 60th day.

Serial agglutination tests revealed rising titers for *L. pomona* (0 to 1:3200), *L. autumnalis* A (0 to 1:400) and *L. autumnalis* AB (0 to 1:400).

Case 3, [REDACTED] 41 WM [REDACTED] (Case 7, Table 1)

Hospitalized [REDACTED]-57. He had fever, chills, headache and myalgia beginning two weeks prior to admission and subsiding after 5 days. Thereafter he felt well except for slight malaise until abrupt onset of intense bitemporal headache, retrobulbar pain and stiff, painful neck on [REDACTED]-57, 13 days after onset of illness. There was onset of fever (102°F.) and severe vomiting on the 14th day and he was admitted for these complaints. He had waded in a small stream about 1 week prior to onset of illness.

T. 102°F., pulse 92, BP 140/90. There was nuchal rigidity, without Kernig's and Brudzinski's signs, but no jaundice, rash, icterus, or conjunctivitis.

Hb. 14.4 gm %, ESR 28 mm./hr., WBC 13,900/cu. mm., neutrophils 85%, and urine normal.

Lumbar puncture on admission disclosed pressure of 350 mm. of fluid, 406 cells/cu. mm. (95% lymphocytes), protein 113 mg. % and sugar 69 mg. %. He became afebrile on the 3rd hospital day and was asymptomatic after 4 days in the hospital.

Agglutination tests revealed sustained titer for *L. grippotyphosa* (1:1600).

Case 4, [REDACTED] 33 CM [REDACTED] (Case 1, Table 1)

Hospitalized [REDACTED] -57 3 days following abrupt onset of fever, recurrent chills, frontal headache, myalgia, abdominal pain, malaise, anorexia and constipation. Tetracycline therapy, begun on the 2nd day, was of no benefit. He had been exposed to a sick dog and to stagnant water. Excessive use of alcohol was denied.

T. 103.6°F. P. 112, BP 115/80. There was conjunctival suffusion, slight nuchal rigidity, muscular tenderness, abdominal tenderness, distension, and hypoactive peristalsis.

Hb. 13.5 gm. %, ESR 32 mm./hr., WBC 7,600 with 76% neutrophils, and urine negative except for 2 plus protein and a few granular casts and WBC. Liver function tests normal on sixth day of illness, but on the ninth day the bilirubin was 1.5 mg. % and thymol turbidity 10 units.

The CSF was normal on admission. There was defervescence on the sixth day coincident with onset of severe delirium which necessitated restraints for 3 days, following which he was asymptomatic. CSF contained 11 cells on the sixth day.

Agglutination tests: *L. canicola* 0, 1:1600, 1:3200; *L. icterohemorrhagiae* 0, 1:1600, 0; *L. pomona* and *L. hebdomadis* 0, 1:800, 1:100.

Case 5, [REDACTED] 62 WM [REDACTED] (Case 11, Table 1)

Hospitalized [REDACTED] -51 on the 8th day of an illness which began with a chill followed by generalized aching, worse in the legs, moderately severe frontal headache, malaise, anorexia, and constipation. He noted orange colored urine 4 days prior to admission, swelling of the legs 3 days PTA, putty colored stools 1 day PTA, and jaundice on the day of admission. He kept cows, pigs, and horses on his farm and had seen rats in his barn but had no contact with stagnant water.

T. 100.4°F., P. 84, BP 148/90. The skin and sclerae were icteric and the conjunctivae were suffused. The liver and spleen were not palpable.

WBC 24,400, neutrophils 92%, Hb. 12.4 gm. % and ESR 35 mm./hr. Urine specific gravity 1.016, protein 2 plus and bile positive. C.F. 4 plus, T. T. 13 units, alkaline phosphatase 7.7 B.U., bilirubin 12.5 mg. %, serum albumin 2.6 gm %, globulin 2.3 gm. %, cholesterol 196 mg. %, esters 70 mg. % and BUN 25 mg. %. All tests returning progressively to normal by 5th week.

There was low grade fever until the 17th day of illness. Diuresis began on the 13th day and weight loss was 40 lbs. in the next 10 days. He had few complaints in the hospital. The CSF was normal on the 11th day.

The agglutination titer for *L. grippotyphosa* was 1:400 on the 13th day, rising to 1:25,600 on the 17th day.

Table 1 - Cerebrospinal Fluid Findings

| Patient | Case | Day of Illness | WBC/mm ³ | %PMN | % Lymphs | Protein | Sugar |
|---------|------|----------------------------------|-------------------------------------|----------------------------|------------------------------------|----------------------------------|----------------------------------|
| ■ | 1 | 4 6 | 0 11 | -- 66 | -- 44 | 34 30 | 89 73 |
| ■ | 3 | 5 7 12 31 60 | 0 288 95 112 12 | -- 25 2 2 8 | -- 75 98 98 92 | 17 140 33 56 36 | 81 100 73 65 -- |
| ■ | 4 | 6 12 50 | 0 35 10 | -- 11 -- | -- 89 100 | 41 17 39 | 85 -- -- |
| ■ | 5 | 7 14 | 382 17 | 91 18 | 9 82 | 102 53 | 73 -- |
| ■ | 6 | 11 41 | 180 4 | 66 -- | 34 100 | 66 39 | 59 -- |
| ■ | 7 | 23 26 30 35 46 74 | 533 450 287 102 42 9 | 2 9 3 2 - - | 98 91 97 98 100 100 | 91 89 61 46 41 48 | 65 -- -- -- -- -- |
| ■ | 8 | 13 16 22 35 | 406 376 133 18 | - 5 30 11 | 98 95 70 89 | 113 70 47 35 | 69 69 -- -- |
| ■ | 9 | 8 | 13 | 15 | 85 | 45 | 89 |
| ■ | 10 | 10 16 | 56 0 | 76 -- | 24 -- | 82 128 | 63 49 |
| ■ | 11 | 11 | 0 | -- | -- | 90 | 100 |
| ■ | 12 | 7 | 12 | -- | 100 | 34 | 77 |

TABLE 2

LEPTOSPIRAE IN THE UNITED STATES

| Serotype | Original Isolation | Known Host in U.S. | Occurrence | | | |
|--------------------------------------|--------------------|--|------------|------------|------------|--------|
| | | | Man | Dogs | Cattle | Swine |
| <u>L. icterohemorrhagiae</u> | Japan Germany | Rat | Common | Occasional | ? | ? |
| <u>L. Canicola</u> | Netherlands | Dog, Cattle | Occasional | Common | Rare | Rare |
| <u>L. pomona</u> | Australia | Swine, Skunk Raccoon, Wildcat Opussum | Occasional | Rare | Common | Common |
| <u>L. autumnalis</u> | Japan Denmark | Opussum, Raccoon Mice, Gray Fox, Opussum, Wildcat, Rat, Raccoon, Striped Skunk | Rare ? | ? ? | ? ? | ? ? |
| <u>L. grippotyphosa</u> | Russia | Raccoon | Rare * | ? | Rare * | ? |
| <u>L. bataviae</u> | Indonesia | ? | Rare * | ? | ? | ? |
| <u>L. sejroe</u> | Denmark | ? | ? | ? | Sporadic * | ? |
| <u>Hebdomadis</u> serogroup (LT 117) | United States | Opussum, raccoon | ? | ? | ? | ? |
| <u>L. australis</u> A. | Australia | Raccoon, opussum | ? | ? | ? | ? |
| <u>L. bakeri</u> ** | United States | Opussum | ? | ? | ? | ? |
| <u>Mitis-hyos</u> serogroup (LT 81) | United States | Opussum, raccoon | ? | ? | ? | ? |

*Serological evidence only

**Mitis-hyos serogroup

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