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Clinical Profile of Leptospirosis in Khammam

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ABSTRACT

BACKGROUND: *In the last few decades infectious diseases like leptospirosis have re-emerged and are on the rise. With other infectious diseases like Malaria, Dengue, Infective hepatitis which simulate leptospirosis being rampant, there is a need to know the clinical profile, complications of leptospirosis particularly from this part of the country.*

OBJECTIVES: *The present study was undertaken to understand the clinical profile, laboratory findings and complications of leptospirosis.*

METHODS: *Fifty patients who were positive for IgM anti leptospiral antibodies in Mamata General Hospital were subjected to detailed history, clinical examination, investigations and followed up till discharge or death. They were treated as per protocol, clinical data was tabulated. Statistical analysis was done.*

RESULTS: *Dark Ground Microscopy of urine was positive for leptospira in 58% patients. The age groupcommonly involved was 20-39 years(58%). Most of the patients were males (76%), with occupation involving outdoor activity(66%). Common symptoms encountered were fever, musculoskeletal, jaundice and oliguria. Less commonly seen were bleeding, gastrointestinal symptoms, respiratory symptoms and altered sensorium. Important signs seen were conjunctival suffusion, hepatomegaly, hypotension, splenomegaly. Hyperbilurubinemia was predominantly of conjugated type and elevation of transminases was mild to moderate. Mean bilurubin was 4.67mg/dl. Mean SGOT was 99.23U/L and SGPT was 96.97U/L. AKI was seen in 46% and six of them needed Hemodialysis. Thrombocytopenia was seen in 56% patients.40% had multiorgan failure, 4% had aseptic meningitis, 2% had ARDS, 2% had GI hemorrhage.*

CONCLUSION; *A high degree of clinical suspicion is the key to diagnosis ofleptospirosis. Fever and musculoskeletal features are most common symptoms. Conjunctival suffusion is a common finding. Liver and kidney are common organs involved. Multi Organ Failure was significantly associated with mortality ($p<.05$). Thrombocytopenia was significantly related to clinical bleeding ($p<.001$)*

INTRODUCTION

- Leptospirosis, a zoonosis with protean manifestations occurs worldwide and is characterized by great clinical variability, ranging from a mild flu like illness to an acute life threatening condition[1]
- In recent past Leptospirosis has re-emerged and more evident. It has hit virtually all parts of urban, semi urban, semi rural and rural India in last decade[2].
- Leptospirosis cases have been reported throughout the year at majority of hospitals in India[3].

- It occurs sporadically throughout the year, with a peak seasonal incidence in rainy season in tropical regions and the late summer to early fall in temperate regions[4]. Large epidemics can occur after monsoons and periods of heavy rainfall[3]
- It is very much under-reported in India mostly due to unawareness and lack of. The incidence of leptospirosis in developing countries is 10–100/1,00,000 cases per year. By this estimate, India should report 0.1–1.0 million cases per year, but less than 10,000 cases are reported.
- Only four states (Kerala, Gujarat, Tamil Nadu and Maharashtra) report more than 500 cases per year. Andaman, Andhra Pradesh, Assam, Goa, Delhi, Karnataka, Orissa, Puducherry and Uttar Pradesh also report cases.[5,6]
- As Leptospirosis is more frequently seen nowadays in tertiary care centre like ours, we found the need to study the clinical profile and complications of Leptospirosis.

AIMS and OBJECTIVES of the Study:

1. To study the symptoms and signs of leptospirosis
2. To study the complications and organs commonly involved

MATERIALS and METHODS

Patients attending Mamata General and Super Speciality Hospital, Khammam with positive IgM Antileptospiral Antibody from October,2013 to August,2015 have been studied.

All patients having fever, headache, generalized body aches, associated with at least any one of the following sets of symptoms and signs were screened for IgM anti-leptospiral antibody by ELISA technique.

a) Jaundice/Icterus
b) Decreased Urine Output
c) Cough, hemoptysis, shortness of breath
d) Altered sensorium and Neck stiffness
e) Bleeding manifestations including conjunctival suffusion

Inclusion criteria: Patients positive for IgM antileptospiral antibody by ELISA technique.

Exclusion criteria: a) Acute Malaria Infection
b) Hepatitis B Infected

Sample Size: 50 patients positive for IgM antileptospiral antibody by ELISA technique.

These were included and subjected to required investigations treatment and followed up till discharge or death

Investigations done:

- IgM antileptospiral antibody by ELISA
- Smear for Malarial parasite
- Hemogram
- Urine for dark ground microscopy
- Chest X-ray PA view
- Renal Function Tests
- Liver function tests
- ECG
- USG abdomen
- Lumbar puncture with CSF analysis in patients with altered sensorium

RESULTS

Age and Sex distribution

Table 1 : Age and sex Distribution

Age(years)	Males	%	Females	%	Total	%
0-20	2	5.3	0	-	2	4
21-30	10	26.3	2	16.7	12	24
31-40	12	31.6	5	41.7	17	34
41-50	10	26.3	4	33.3	14	28
>50	4	10.5	1	8.3	5	10
Total	38	100	12	100	50	100

- Most of the patients are males 38 male and 12 female
  The majority of the patients in the study were aged between twenty-fifty years (78%) with a mean of 36.78years and range of 18 to 65 years.

Occupation :

TABLE-2

OCCUPATION	NO OF PATIENTS (n=50)	%
1.FARMERS	22	44.0
2.OUTDOOR NON MANUAL LABOURERS	7	14.0
3.OUTDOOR MANUAL LABOURERS	9	18.0
4.HOUSEWIVES	7	14.0
5.STUDENTS	2	4.0
6.OTHERS	3	6.0

- Most of thepatients studied were farmers (44%) followed by manual daily labourworkers(18%) while4% were students.

Duration of fever in patients **TABLE-3**

DURATION OF FEVER	NO OF PATIENTS (n=50)	%
<3 days	4	8.0
4-7 days	27	54.0
8-10days	4	8.0
>10 days	15	6.0

- Of the 50 patients in our study, 4 had fever for less than 3 days,27 had fever for 4-7 days , 4 patients had fever for 8-10 days and 15 patients had more than 10 days

Clinical Features **TABLE-4**

Symptom	Present	%	P-Value
Fever	50	100	< 0.05
Headache	30	60	< 0.05
Vomiting	33	66	< 0.05
Myalgia	44	88	< 0.05
Arthralgia	29	58	< 0.05
Cough	7	14	> 0.05
Breathlessness	3	6	> 0.05
Jaundice	27	54	< 0.05
Oliguria	16	32	> 0.05
Sub conj. suffusion	2	4	> 0.05
Epistaxis	1	2	> 0.05
Hematuria	2	4	> 0.05
Bleeding gums	1	2	> 0.05
Ecchymosis	1	2	> 0.05

- In our study most common presenting symptoms were Fever in all 50 patients(100%) followed by Myalgia 44 patients(88%), Vomiting 33 patients(66%), Headache 30 patients(60%), Arthralgia 29 patients(58%), Jaundice 27 patients(54%), Oliguria 16 patients(32%).
- Among bleeding manifestations epistaxis,sub conjunctivalhaemorrhage, hematuria, bleeding gums, ecchymosis are observed in 7 patients(14%).
- Breathlessness developed in 3 patients(6%) who showed features of ARDS

Laboratory findings **Table 5 : Heamatology Observations**

COMPLICATION	PRESENT	%
Anemia	22	44
Leucocytosis	13	26
Leucopenia	9	18
High ESR	26	52

- In our study out of 50 patients 22 patients (44%) had anemia with hemoglobin level below 11gm%, Of them only 4 patients(8%) had Hb level is less than 7gm%, Among 22 patients 4 patients received blood transfusion, 18 patients were treated through oral medication.
- Out of 50 patients 9 patients(18%) had leucopenia (TC< 4500) and 13 patients(26%) had leukocytosis (TC> 11500). In this study minimum being TC-2600 and maximum being TC-20,000.
- Out of 50 patients 26 patients(52%) had high ESR with highest ESR recorded is 140

TABLE-6 : LIVER FUNCTION TESTS

LFT	No. of patients	%	P-value
Total Bilirubin(> 1.1mg/dl)	32	64	< 0.05
Direct Bilirubin (> 0.2mg/dl)	40	80	< 0.05
SGOT (> 40u/L)	34	68	< 0.05
SGPT (> 40u/L)	34	68	< 0.05
ALP (> 147u/L)	15	30	> 0.05

Table 7 : RENAL FUNCTION TESTS

Renal Parameters	No. of Patients	%
Urea(> 40mg/dl)	27	54
Creatinine(> 1.4 mg/dl)	16	32

- In our study, a total of27 patients(54%) have high levels of blood urea(i.e> 40mg/dl) in these, 14 patients have blood urea level of 41-80mg/dl, 2 patients 81-100mg/dl, 9 patients 101-200mg/dl, 2 patients 201-250mg/dl
- Out of 50 patients, 16 patients (32%) creatinine level is elevated (i.e> 1.4) Out of 16 patients 6 patients creatinine is > 4.1, 4 patients 1.41-2.0mg/dl,
- 3 patients 2.1-3.0mg/dl, 1 patient 3.1-4mg/dl
- 32 patients(64%) Total Bilirubinis elevated(> 1.1mg/dl), Maximum total bilirubin observed in this study is 16.50mg/dl.
- 40 patients (80%) Direct bilirubin is elevated(> 0.2mg/dl), Maximum Directbilirubin observed in this study is 10.8mg/dl
- 34 patients(68%) SGOT level is elevated(> 40u/l)
- 34 patients(68%) SGPT is elevated (>40u/l)
- 15 patients(30%) ALP is elevated (ie> 147u/l)

Complications Table 8 :

Complications	No. of Cases	%
HEPATITIS (H)	7	14
AKI	4	8
AKI+H	17	34
H+ Alt Sensorium	2	4
Myocarditis +H+AKI	1	2
H+ AKI+ARDS	2	4
AKI+ H + M + ARDS	1	2
No Complications	16	32
Total	50	100

- In our study out of 50 patients 16 patients(32%) had no complications, 34 patients(68%) have developed various complications.
- Off them 4 patients (8%) developed AKI, 7 patients(14%) developed hepatitis, 17 patients(34%) AKI with Hepatitis, 2 patients(4%) Hepatitis with Altered sensorium, only1 patient(2%) developed Myocarditis; Hepatitis; AKI, 1 patient(2%) developed AKI, ARDS, Hepatitis, Myocarditis, 2 patients(4%) ARDS with AKI and Hepatitis.

Cases depending upon platelet count Table 9

Platelet count	No of Patients	%	Cumulative %
0-20,000	1	2	2
20001-30000	2	4	6
30001-50000	8	16	22
50001-100000	22	44	66
100001-150000	7	14	80
> 150000	10	20	100
Total	50	100	

- Out of 50 patients 40patients(80%) had thrombocytopenia with platelet count less than 150000.
- Among these 40 patients 1 patient(2%) platelet count below 20000, 2 patients(4%) 20001-30000, 8 patients(16%) 30001-50000, 22 patients(44%) 50001-100000, 7 patients(14%) 100001-150000.

Hospital stay (in days) Table 10

No of Days	No. of Cases	%	Cumulative %
0-5	15	30	30
6-10	25	50	80
11-15	7	14	94
16-20	3	6	100
Total	50	100	

- In this study 25 patients(50%) have stayed at the hospital between 6-10 daysonly 3 patients(6%) have stayed for 16-20 days.

OUTCOME

Table 11

Outcome	Number	%
Recovered	48	96
Death	2	4

- In this study out of 50 patients 2 patients (4%) died because of Acute respiratory distress syndrome, Hepatitis and Acute renal failure.

DISCUSSION

- The present study was undertaken with an objective to study the clinical profile, laboratory findings and complications of leptospirosis.
- IgM ELISA is the test of choice for diagnosing current leptospiral infection[7]
- In our study 76% of the patients were males. Agriculturists& Housewives were accounting for 88%.
- A study done in Madras in 1990-91 by M.A Muthusethupathi et al, which included 57 cases showed outdoor manual workers accounted for 59%.[8]
- In another study by Singh et al, commonest age group affected was 21 to 40 years[9] and 86.2% of patients were males[9.]
- Occupation of patients in our study revealed occurrence of the disease to be more common in people engaged in outdoor activities like agriculture (44%), manual labour (18%) and non manual labour (14%). This was comparable to a study by Muthusethupathi et al where 49% were out door workers, 8.8% were outdoor non manual workers[8].
- According to Alan R Katz et al 28% were farmers,16% were outdoor manual labourers and 31% had no formal employment [10]
- All the patients had fever, 62% of cases had fever duration less than 1 week. Even in Muthusethupathi et al study all patients had fever[8]. Longest recorded duration of fever in this study was 30 days, which was seen in 3 cases.
- These patients had acute renal failure and low platelet count with elevated liver function tests (Multi Organ dysfunction). Jaundice was seen in 54% of cases. In Muthusethupathi et al study 84% cases had jaundice. In this study 32% of the cases had oliguria, all of them had moderate to severe renal failure but total of 25 cases (50%) had acute renal failure. Of the 32% of the cases who presented with oliguric renal failure, 10 cases(30%) required dialysis, reflecting oliguric renal failure as bad prognostic sign.
- Muthusethupathi et al, have found clinical features of fever (100%), myalgia (82%), jaundice (85%), Oliguria (72%), bleeding (25%) and altered sensorium (49%)[8].
- Gopalakrishnan et al, have found clinical features of fever (98%), Jaundice (40%), myalgia (72%) and bleeding (25%)[11].
- Cecil textbook of medicine gives an incidence of altered sensorium as 30%. Compared to study of Madras and Cecil textbook in our study the incidence of altered sensorium is low because of early diagnosis and treatment. Nowadays neurological manifestations have reduced.[15]

- Conjunctival suffusion was seen in 30% of cases, Conjunctival suffusion has been reported by Muthusethupathi et al in 58% of their patients [8] and by Singh et al 50% of their patients [9]
- Hypotension (systolic B.P-<80mmHg)was present in 14% of cases at the time of admission. Hepatomegaly was seen in 84% of the cases, splenomegaly was seen in 58% of the cases.
- A study done in USA in 1950 showed the incidence of splenomegaly to be 15% and hepatomegaly to be 80%. 14% of the patients had bleeding tendencies and in all these patients platelet count was less than 50000/mm^3.
- In the Muthusethupathi et al study 26% of the cases had evidence of internal bleeding. In western studies incidence of bleeding tendencies ranges from 7-10%.
- Other findings seen in the study included hepatomegaly (32%), splenomegaly (14%) and hypotension (12%).
- Singh et al have found clinical features as fever (100%), myalgia (97.9%), jaundice (51.7%), oliguria (20.7%)s, altered sensorium (12.1%), hepatomegaly (6.9%) and hypotension (40%) [9]
- Liver is the organ which is affected most(80%). In this study 80% of the cases had abnormal liver function tests. Most of the elevation of SGOT& SGPT mild to moderate ranging from 40-250u/l. Total bilirubin > 1.1mg% was seen in 64% Direct bilirubin >2.0mg% is seen in 80% of the cases. SGOT is > 40u/l in 68% of the cases. SGPT is elevated > 40u/l in 68% of the cases. ALP is elevated > 147u/l in 30% of the cases. In Muthusethupathi et al study 84% of the cases had high bilirubin(> 2mg%) and abnormal SGOT& SGPT(>50u/l)[8]
- Only 4 patients(8%) have shown abnormalities in chest X-RAY. 1 patient(2%) showed features of CCF. 3 patients(6%) showed festures of ARDS. ABG was done showing 6% of patients with Metabolic acidosis. 2 patients(4%) had features of Myocarditis.
- Kidney is the 2nd most common organ involved. Tubulointerstitial nephritis is the main cause of acute renal injury in leptospirosis leading to ARF[12.]
- Muthusethupathi et al have reportedoliguric AKI in all their patients with renal involvement[8].
- Thrombocytopenia is significantly associated with clinical bleeding (P<.001)
- In our study of 50 patients 68% developed complications 32% of patients had no complications. Of these 68% of the patients 8% patients had Acute renal failure, 14% had Hepatic damage, 34% had both Acute renal failure and Hepatic damage, 4% developed Hepatic damage & Altered sensorium, 2% had Myocarditis, Hepatic damage with Acute renal failure, 4% had ARDS, ARF& Hepatic damage. 2% developed ARF, ARDS, Myocarditis, Hepatic damage.
- Out of 50 patients 46% of the patients developed Multi organ damage (2 or more organs are involved). 2 patients(4%) died due to ARDS, ARF & Hepatic damage. 80% of the patients stayed at the hospital for less than 10 days

CONCLUSION

- Leptospirosis is one of the most common infectious disease in the recent past, but is missed or goes unreported due to lack of adequate knowledge and facilities.
- Generally farmers and labour workers with poor hygeine are most affected population
- It most commonly involves Liver, Kidney and Pulmonary .
- Death if occurred is most commonly due to pulmonary involvement.
- Leptospirosis has become a mojor health problem in tropical and sub tropical region

so early diagnosis and initiation of treatment prevents mortality and morbidity.

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