

Original Research Article

Clinical profile and prognostic factors of leptospirosis: a study of 50 cases from North Kerala, India

Rijit Kannan*, Anoop George Alex

Department of Medicine, A.C.M.E, Pariyaram, Kannur, Kerala, India

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***Correspondence:**

Dr. Rijit Kannan,

E-mail: drrijithkannan@gmail.com

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ABSTRACT

Background: Leptospirosis is the most common zoonosis in the world. In humans it is caused by leptospira interrogans group of organism. It is an emerging disease in various part of the Kerala since 1980 and frequent epidemic with high mortality is being reported. Severe leptospirosis is characterized by jaundice, renal dysfunction, and hemorrhagic manifestation and with high mortality. Studies on assessing the prognostic factors in leptospirosis is only few from this area. This study was conducted to assess the clinical profile and prognostic factors of icteric leptospirosis.

Methods: This is a prospective study conducted at academy of medical sciences Pariyaram involving 50 cases from the medical intensive care unit and wards with clinical features of leptospirosis and confirmed by the ELISA. All the patients were investigated and assessed for the complications and out come.

Results: 50 cases of clinically and serologically confirmed cases of leptospirosis were included in this study of which 39 (78%) were males and 11(22)% were females. Among males maximum cases were reported in 40 to 44 age group and that females 30-34 age group. Of the 50 cases 7 patients expired and most common cause of mortality among this were acute respiratory distress syndrome (90%). Five patients had residual renal failure at the time of discharge.

Conclusions: Leptospirosis was a common cause of hepatorenal failure in this area and important cause of mortality among agriculture workers during monsoon and post monsoon period. Acute respiratory distress syndrome, and renal failure was the most common cause of mortality. Out of the 50 patients studied, 36 patient got cured and seven patient died and five patients got discharged with residual renal and hepatic dysfunction. The mortality rate was 14% higher than noticed in other studies. patient who had early dialysis, plasma transfusion had a better prognosis.

Keywords: ARDS, Leptospirosis, Prognosis, Renal failure

INTRODUCTION

Leptospirosis is the most common zoonosis in the world.¹ This disease caused by the leptospira interrogans group of organism belong to the spirochaete and commonly transmitted by rats and other domestic animals. Leptospirosis is the most common cause of renal failure in the monsoon and post monsoon period in several part of India and the agriculture workers, those involved in

sewage works, and water recreation are commonly affected.² Though most common form is anicteric leptospirosis affecting nearly 90 percent, severe of form of leptospirosis involving kidney and liver is known as weils disease and mortality was very high among this patients.³ In addition to hepatorenal syndrome, acute respiratory distress, hemorrhagic manifestation, and hepatopulmonary syndrome are also cause of high mortality.⁴ Leptospirosis involve more among the male

patients and early treatment with penicillin group drugs, will decrease mortality. Studies on the prognosis and mortality was very few in this area. Academy of medical sciences is a tertiary care centre in the northern part of Kerala state in India and this study was conducted to assess the prognostic factors of leptospirosis.

METHODS

This is a prospective observational study conducted at academy of medical sciences, Pariyaram which is a tertiary care center in the norther part of the Kerala. The study was conducted during a period of one year after getting the institutional ethical committee clearance. All the patients who were clinically suspected leptospirosis as per Faines criteria, serum ELISA was sent and there were 50 cases of leptospirosis IGM positive cases. The identified cases were daily monitored for development of complication. In all patient’s daily urea, creatin, platelet count, cardiovascular assessment and any respiratory complications were monitored. the treatment and the complication were recorded and the mortality data was analysed using statistical package for social science SPSS 16.

RESULTS

A total number of 50 serologically confirmed cases were included in the study. Of this 39 (78%) were males and 11(22%) were females. Among males maximum cases were reported in 40-44 age groups and among females it was reported in the 30-34 age groups indicating the burden the disease carries as it maximally affects people in the most productive period of their lives. Almost 100% of patients in both the groups had fever as their presenting complaints.

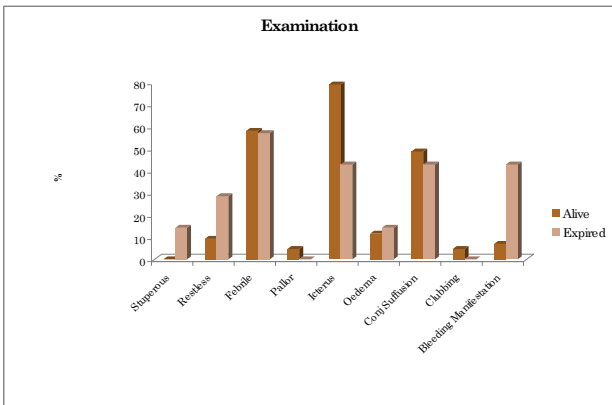


Figure 1: Clinical findings.

Among the patients who expired headache and breathlessness were the next prominent symptoms and among those who were cured headache, yellowish urine and jaundice were the prominent symptoms after fever. Almost 90 % of patients who expired developed ARDS during the course of treatment which confirms too many

other studies citing ARDS as the major cause for mortality in Leptospirosis.

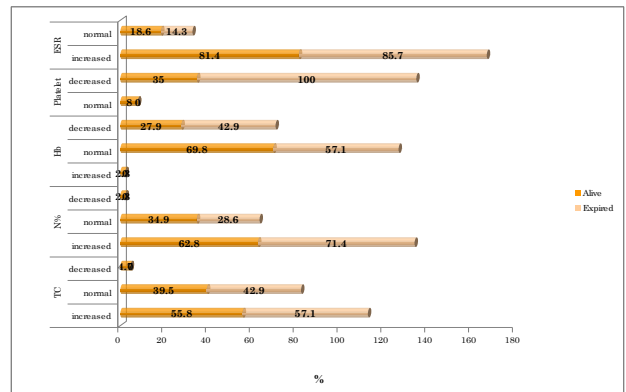


Figure 2: Hemograms in leptospirosis.

Among 16% of patients who succumbed to the disease had COPD in persons with barefoot walking was a common feature seen in almost 70% of patients who got cured and almost 60% of patients who expired. Almost 60% of patients were addicted to alcohol and cigarette. It is interesting to note the correlation between a higher incidence of cigarette smoking, COPD and ARDS in the group of patients who succumbed to Leptospirosis. almost 35% of patients who got cured had received Crystalline penicillin or Doxycycline before getting admitted here while the % was much less (15%) in those who got expired, indicating a positive correlation between early treatment with CP/Doxycycline and better prognosis.

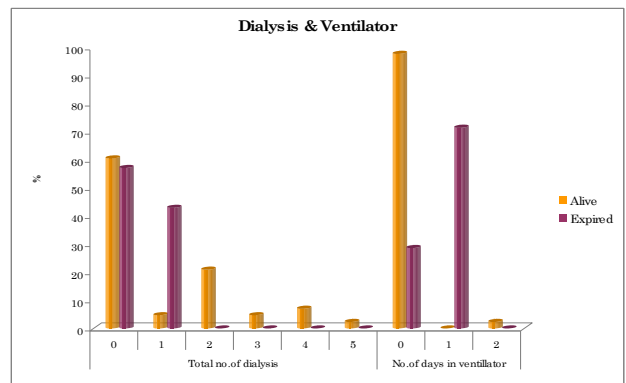


Figure 3: Patients on dialysis and ventilator support.

Hypoglycaemia was present in 28% of patients who expired. Hypotension was seen in 57% of patients who expired. A High ESR was seen in almost 86% of patients who expired and in 81% of patients who got cured. Thrombocytopenia was seen in 100% of patients who succumbed to the disease. Around 43% patients who expired had anaemia as clinical manifestations. Neutrophilia was seen in 71.4% of patients and Leukocytosis was seen in 57% of patients who expired. Hyponatremia was seen in 57% of patients who succumbed to Leptospirosis. Haematuria was a

significant finding in urine examination among those patients who succumbed to the disease.

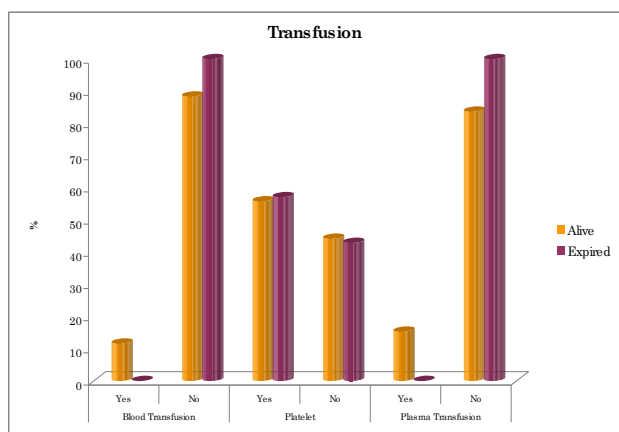


Figure 4: Blood component transfusion and outcome.

Dialysis showed a positive association with better prognosis in those who had renal failure and or ARDS due to leptospirosis. Most of the patients who required ventilator support succumbed to the disease. The combination with Ofloxacin was found to have a better prognosis than that with Doxycycline, Ceftriaxone or Ampicillin. Almost 100 % of patients who didn't receive blood or plasma transfusions expired during the course of admissions while around 20 % of those who got it survived.

Most of the cases of death occurred in the first two days with complication.

Out of the 50 patients 36 were cured of the disease. 7 patients expired. 5 patients got discharged with residual renal/hepatic dysfunction and 2 patients were discharged against medical advice.

DISCUSSION

This was a prospective observational study conducted in a tertiary care in the northern district of Kerala. 50 cases which were serologically confirmed were studied to determine the prognostic factors. Males patients in the age group of 40 to 44 years were most commonly involved because they are actively pursuing agricultural activity in this region. Similar observation of male preponderance was made by Parmar G et al from Surat Indicating the burden the disease carries as it maximally affects people in the most productive period of their lives.⁵ Fever is the most common symptom on presentation similar to other studies Those affected with leptospirosis in this study 84 percent reside rural area engaged in agricultural activities. Fever is the most common symptoms affecting 100 percent of the patient. Though fever and icterus was common initial clinical findings, those with additional bleeding manifestation showed more complications and mortality. Lung and neurological involvement as found to be major predictor

of mortality by Pappachan et al similar to our observation of that 90 percent of those who died had ARDS.⁶

Out of the 50 patients 36 were cured of the disease. 7 patients expired. 5 patients got discharged with residual renal/hepatic dysfunction and 2 patients were discharged against medical advice.

Those patients who had breathless and severe head ache showed increased complication ARDS during the course of treatment was the most common cause of mortality in this group of patients have also reported that ARDS is a life threatening complication in leptospirosis and other haemorrhagic fever.⁷ Among 16% of patients who succumbed to the disease had a history of COPD in past also showed that COPD and other pre-existing respiratory disease increased mortality in leptospirosis. In this study 60 percent patients are addicted to alcohol also showed increased complication. Hepatopulmonary haemorrhage is reported more by Segura et al but in this case series no case of hepatopulmonary syndrome was observed.⁸ Of the 50 patients 35 patients who were given penicillin or doxy cycine with in four days of onset of leptospirosis had less mortality. Similar observation was made by Balakrishnan Valliyot et al from North Kerala.⁹ Early antibiotic treatment is a better prognostic indicator in this study. one of the interesting observation was that 28% of the expired patients had persistent hypoglycaemia. Persistent hypotension inspite of inotropic support also a predictor of mortality. ESR did not appeared a factor in the prognosis and the difference among those expired and cured only 5%. Thrombocytopenia noticed in 100 percent those expired. In a study by Sharma J et al from Mumbai reported a prevalence of thrombocytopenia 56 percent.¹⁰ Hyponatremia was seen in 57% of patients who succumbed to Leptospirosis. Altered mineral and fluid balance is a common complication of leptospirosis.¹¹ Patient who had early dialysis also had better outcome.¹² Early blood or plasma transfusion saved 20 percent of severely affected prognosis. Mortality occurred in the first two days in intensive care unit and survival noticed better among those who had an average eight days of hospitalisation. This study concluded that leptospirosis has high mortality rate and early dialysis and transfusion of plasma and blood products had favourable outcome.

CONCLUSION

Leptospirosis was the most common bacterial infection in the monsoon and post monsoon period affecting the agricultural workers of the region. Fever is the most common presenting symptom affecting 100% of the cases. Early elevation of urea and creatine was noticed in most of the patients who developed later complication. Out of the total 50 cases studied 36 patients got cured and seven patients expired. This constitute a mortality rate of 14% which is higher compared to other studies. Patient with COPD and cigarette smoking had higher incidence of ARDS. More complication was noticed in patient taking alcohol. Patient who was given antibiotic like

penicillin or doxycycline had less mortality if started in the first four days. Hypoglycemia was noticed in 28 percent and, hypotension in 57% and thrombocytopenia in 100 percent of the patient who expired. Haematuria was a significant finding in urine examination among those patients who succumbed to the disease. Dialysis showed a positive association with better prognosis in those who had renal failure. ARDS was the most common cause of death and Out of the seven patient died 90 percent developed ARDS. Almost 100 percent of the patient who has not received any blood or plasma died and 20 percent patient who received plasma and blood product recovered. Early dialysis, ventilation and plasma or blood product transfusion on the right time will decrease the mortality in complicated leptospirosis.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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