ISSN: 0976-3325

Original Article

POST-FLOOD PROFILE OF LEPTOSPIROSIS CASES AT TEACHING HOSPITAL OF MUNICIPAL MEDICAL COLLEGE IN SURAT CITY

Prasad Rachna[1], Srivastava Vipul[2], Bansal RK[3], Pawar AB[1], Desai Vandana[4], Desai Kalpana[5], Jain Mannu[6]

[1]Associate professor, [3]Professor and Head, Department of Community Medicine, [2]Professor and Head, Department of Medicine, [4]Professor and Head, Department of Pediatrics & I/c. Medical Supdt., [5]Dean, [6]Professor and Head, Department of Microbiology, SMIMER, Surat.

Correspondent: drrkbansal@gmail.com

ABSTRACT

This study reports the clinical profile, pattern of organ involvement and the case fatality of 112 cases of Leptospirosis admitted during an outbreak in the post flood period from August to September 2006 in Surat city. The study reveals the necessity for early detection of cases in an epidemic situation, chemoprophylaxis of those exposed and prompt referral and management with excellent ICU support for decreasing the mortality associated with the disease.

Key words: Leptospirosis, post-flood period, case fatality, clinical profile, organ involvement.

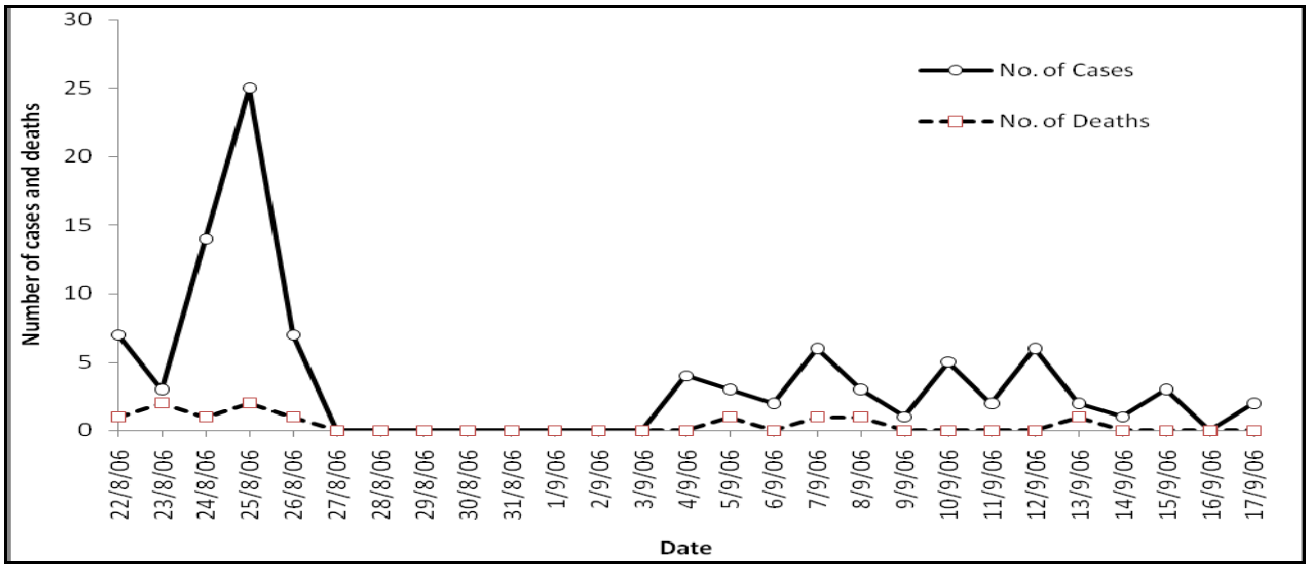
INTRODUCTION

Leptospirosis according to core epidemiological determinants has various forms rural, urban, recreational and those associated with natural disasters. Since 1990 interest for this disease was rekindled and was started considering as an emerging disease on global scale with reported epidemic among general population especially after floods[1]. In India it posed as a public health problem from 1980 onwards, though isolated cases were reported earlier also[2]. It is characterized by acute febrile illness with biphasic course, excellent prognosis, low suspicion index, protean, non-specific manifestations and unavailability of adequate diagnostic facilities in many areas.[3] In South Gujarat region, increasing incidence of leptospirosis has been witnessed for the last few years.[4] In India outbreaks occur characteristically between August–September/February–March, mostly in coastal regions i.e. Gujarat, Mumbai, Kerala, Chennai and Andaman Islands. [5-6] The primary lesion is damage to the endothelial lining of small blood vessels with the resultant ischemic damage to liver, kidneys, lungs, meninges and muscles[7]. Its epidemiology is extremely complex and dynamic. Death results mainly from renal, hepatic or myocardial failure which can be reduced by providing excellent ICU support.

MATERIAL AND METHODS

In this prospective study all 112 patients who were line- listed according to NICD case definition,[8] were admitted at Surat Municipal Institute of Medical Education & Research (SMIMER), subsequent to the unprecedented floods coupled with sewage backflow in Surat city from 7th -9th August 2006 and have been included in this study. These patients were followed up for the period of total duration of stay in the hospital and their clinical profile, organ involvement and the outcome has been analyzed.

Figure 1: Date wise cases and deaths



RESULT

The first case of Leptospirosis was reported on August 22nd i.e. 15 days after exposure to the contaminated flood waters, corresponding to its incubation period, and the last case was reported on 23rd September.A total of 179 confirmed cases from Surat city tested IgM positive over a period of 30 days. Out of these 179 cases, 112 (62.6%) were admitted at SMIMER. The maximum cases were in the age group of 16-30 years (53.5%) with a male preponderance (79.5%). Age and sex distribution was found to be similar to some studies[4] while male predominance was not seen in other studies[5]. The maximum of the cases belonged to the East zone of Surat city as this is the major catchment area of the hospital. Time distribution of the cases shows that maximum number of the cases occurred in first week of the epidemic only and also the maximum mortality among the patients was also observed in first few days.

The average stay in the hospital seven to eight days with 46.5%, 43.5%, 10.2% being admitted in the hospital for <5 days, 5-14 days and >15 days respectively. Readmission was necessary for 2 cases. Important clinical presentations were fever, vomiting bodyache, myalgia, headache, dyspnoea, enlarged lymph node, icterus, jaundice, abdominal pain, conjunctival hemorrhage and haemoptysis.

Table 1 Clinical Profile of the patients of reported Leptospirosis in comparison to other study

Clinical profile	Number (%)	Peurto Rico[9] 1963, n=208	Hawaii[10] 1999, n=353	Brazil[11] 1999, n=193	India[12] 2002, n=74
Fever	101 (93.5%)	-	-	-	-
Vomiting	72 (66.7%)	69%	73%	-	-
Body ache	69 (63.9%)	-	-	-	-
Myalgia	50 (46.3%)	97%	91%	94%	68%
Headache	44 (40.7%)	91%	89%	75%	92%
Dyspnoea	36 (33.3%)	-	-	-	-
Enlarged lymph node	32 (29.6%)	24%	-	-	15%
Icterus	34 (31.5%)	-	-	-	-
Jaundice	31(28.7%)	49%	39%	93%	34%
Abdominal pain	27 (25%)	-	51%	-	-
Conjunctival hemorrhage	23 (21.3%)	99%	28%	28.5%	35%
Haemoptysis	19 (17.6%)	9%	-	-	35%

We can observe that the clinical picture observed here is alike other studies, however the prevalence of headache and myalgia was lower while that of conjunctival suffusion, lymph nodes enlargement and abdominal pain was higher than other studies.[9-12]

Table 2: Pattern of Organ Involvement and Case Fatality Rates

Organs Involved	N=112	Case fatality rate
Single Organ Involvement		
Lung	13	2 (15.4%)
Liver	9	0 (0.0)
Kidney	5	0 (0.0)
Heart	1	0 (0.0)
Total	28	2 (7.1%)
Multiple Organ Involvement		
Lung and Liver	11	3 (27.3%)
Liver and Kidney	4	2 (50%)
Kidney and Lung	4	0 (0.0)
Heart & any other	4	0 (0.0)
One organ	28 (25%)	2 (7.1%)
Two organs	23 (20.5%)	5 (21.7%)
Three organs	7 (6.3%)	4 (57.1%)
None	54 (48.2%)	0 (0.0)

One or more organ involvement was found in 58 (51.8%) cases and the overall Case Fatality Rate (CFR) was (9.8% as shown in the table. The Bombay epidemic had reported liver as the commonest organ involved in 71.1% instances, whereas lung was involved maximally in the Surat outbreak. Also the CFR observed here is lower than the South Gujarat rural area[3], the Guyana epidemic and the Bombay epidemic. The CFR was zero in cases with no organ involvement and increased significantly with the number of organs involved. Among single organ involvement the highest CFR was observable with lung involvement alike that for the sporadic cases observed in Surat district [3] and the Bombay epidemic. Clinically fever and muscle involvement were present in all cases.

DISCUSSION

The morbidity and mortality profile leptospirosis reveals the necessity for early detection of Leptospirosis cases during an outbreak situation as well as early referral and prompt management at a specialized centre. Early diagnosis of mild and uncomplicated leptospirosis cases is difficult, except during epidemics, as this disease is sporadic and fever cases are common during this season. The preventive strategy includes clearing water logged areas as early as possible because strategies centered on decreasing human and animal contact were found to be difficult to actualize in this epidemic. Thus the mantra for mortality reduction appears to be early and prompt management coupled with provision of excellent ICU

support. It is quite possible that the chemoprophylaxis with doxycycline and amoxicillin administered to fever cases and risk groups during the present outbreak could have led to milder form of the disease observable among the patients and could have lowered the CFR as observed in the Surat study.[22-23]

REFERENCES

1. Kawaguchi L, Sengkeopraseuth B, Tsuyuoka R, Koizumi N, Akashi H, Vongphrachanh P, Haruo Watanabe, Atsuko Aoyama. Seroprevalence of Leptospirosis and Risk Factor Analysis in Flood-prone Rural Areas in Lao PDR. Am. J. Trop. Med. Hyg.; 78(6), 2008: 957-961.
2. Koriakose M, Eapen CK, Paul R. Leptospirosis in Kolenchery, Kerala, India: Epidemiology, prevalent local serogroups and serovars and a new serovar. Eur Jounal Epidemiol;1997 Sept;13(6):691-7.
3. Sehgal SC. Epidemiological pattern of Leptospirosis. Indian Journal of Medical Microbiology 2006; 24 (4): 310.
4. Clerke AM, Leuva AC, Joshi C, Trivedi SV. Clinical Profile of Leptospirosis in South Gujarat. Journal of Postgraduate Medicine 2002; 48 (2): 117-118.
5. Leptospirosis available on http://en.m.wikipedia.org/wiki/leptospirosis [assessed on 15/4/10]
6. Leptospirosis in India_GIDEON- Global Infectious Diseases and Epidemiology Network.htm.
7. Gulati S, Menon S, Kabra M, Chaudhry R, Kalra V. Leptospirosis: A Case Report. Pediatr Today 2002; 7: 428-433.
8. National institute of communicable diseases. Case Definitions of Epidemic Prone Diseases. Delhi: NICD; 1998.
9. Health C.W., Alexander A.D., Galton MM., Leptospirosis in the united states : analysis of 483 cases in man; 1949-1961. N. Engl J Med 1965; 273:1-15
10. Katz AR. Ansdell VE, Effler PV et al. Assessment of the Clinical Presentation and Treatment of 353 cases of laboratory confirmed Leptospirosis in Hawaii, 1974-1988. Clin Infect Dis. 2001; 33: 1834-1841.
11. Ko AI, Galvao Reis M,Ribeiro Dourado CM, et al and Salvador. Leptospirosis Study Group. Urban Epidemic of Severe Leptospirosis in Brazil. Lancet. 1999; 354:820-825.
12. Bhardwaj R, Bal AM, Joshi SA, et al. An Urban Outbreak of Leptospirosis in Mumbai, Indian Jpn J Infect Dis. 2002; 55: 194-196.