Poor Prognostic Indicators of Scrub Typhus

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Abstract

Scrub typhus is an emerging disease in the eastern part of Nepal. Varied clinical presentation and lack of laboratory resources make diagnosis difficult. As this was the first known epidemic in this part of Nepal, unawareness resulted in late presentation with multiple complications and mortality. Hence this cases series alerts the clinician to be speculative for early diagnosis and management.

Key words: Scrub typhus, emerging, mortality

Introduction

Scrub typhus is a mite born acute, febrile, infectious illness caused by a gram negative intracellular coccobacillus *Orientatsutsugamushi*. The disease is distributed throughout the Asia Pacific rim and endemic in Korea, China, Taiwan, Japan, Pakistan, India, Thailand, Malaysia, and Queensland, Australia[1].In Nepal, few caseshas been found in southern plain region, a study from Patan Hospital found 3.2% of 876 febrile cases serologically positive for scrub typhus[2,3]. While lack of easy health accessibility and diagnostic modality impose major health threat, we report five case fatalities from eastern part of Nepal. Fatality could be assigned to highly virulent infection and delayed presentation.

Cases Description

All five cases had reported to the paediatric emergency of B.P. Koirala Institute of Health Science which is a referral institute in the eastern part of Nepal, during the monsoon season of 2015. Four were from the hilly districts and one was form the Plains. The ages were from six to fourteen years and incidentally all were female. All cases were referred from peripheral health centers after eight to ten days of illness with continuous fever of 103^0F to 105^0F with chills and rigors. The clinical presentationsat emergency are tabulated in Table 1.

X-ray at presentation of all the cases showed bilateral infiltrates which over 24-48 hours worsened to acute respiratory distress syndrome (Fig. 1) and the blood gas analysis showed $Pao_2/Fio_2 < 200$. Shock worsened and became catecholamine resistant, followed by pulmonary haemorrhage. The laboratory parameters at presentation of all the five cases are as depicted in Table 2.

Fig 1: X-ray showed bilateral infiltrates

The majority had absence of leukocytosis with low hematocrit and severe thrombocytopenia.LDH was significantly raised along with hypoalbuminemia, raised prothrombin time (PT) and liver enzymes. Scrub typhus IgM was positive and serological tests for malaria, dengue, avian influenza, brucella and leptospira were negative. Blood culture isolated *Staphylococcus aureus* in one case while in other blood and urine cultures were sterile. All the cases received standard antibiotics as per hospital protocol along with doxycycline.

Discussion

Scrub typhus is one of the rare but fatal emerging diseases in Nepal. Because of lack of clinical experience many a time cases are missed at peripheral health

Table 1: Clinical features at presentation (n=5)

Symptoms	No. of Patients (n=5)	Signs	No. of Patients (n=5)
Fever (8-12 days)	5	Shock	5
Dyspnea	5	Capillary leak	5
Myalgia	5	Pedal edema	5
Headache	2	Respiratory distress	5
Pain abdomen	2	Hepatomegaly	5
Cough	2	Chest crepitation	5
Rashes	1	Eschar	1
Drowsiness	1	Maculo-papular rashes	1
Vomiting	1	-	-

Table 2: Important laboratory parameters of all the five cases

Parameters	Case 1	Case 2	Case 3	Case 4	Case 5
TLC(/mm^3)	4600	18,300	4700	5700	6600
DLC (%)	N82 L48	N75 L20 M05	N71 L29	N76 L24	N72L28
Hematocrit (%)	40	29.5	27.53	22.6	26.2
Platelets(/mm^3)	10,000	35,000	30,000	15,000	27,000
PT(sec)/INR	21/1.66	25/2	13/1.07	20/1.53	15/1.07
Urea (mg/dl)	22	24	32	37	48
Creatinine(mg/dl)	0.3	0.4	0.3	0.7	0.7
Protein(gm/dl)	4.9	4.7	4.8	4.7	4.4
Albumin(gm/dl)	3.1	2.4	2.3	2.8	2.2
ALT/AST(IU/L)	126/303	230/198	42/118	126/303	60/144
LDH(IU/L)	1654	1739	3384	2684	1846

* TLC=Total Leucocyte Count, DLC = Differential Leucocyte Count, PT = Prothrombin Time, INR = International Normalized Ratio, ALT = Alanine Transferase, AST= Aspartate Transferase, LDH = Lactate Dehydrogenase.

centres. The disease presents as an acute illness with non-specific signs and symptoms[4].Due to lack of characteristics eschar in 40% of the cases and unavailability of investigation modalities even at tertiary hospital, diagnosis and management is challenging[5]. All the cases had fever and myalgia and only once case had classical eschar. All cases had hepatomegaly but none had lymphadenopathy or spleenomegaly. Although eschar is rarely seen in cases from south east Asia[6], lymphadenopathy is common[7].*Kedareshwaret al reported* fever with myalgia in 80%, rash in 54%, with rare lymphadenopathy or spleenomegaly alike our cases[8].

The average duration of presentation at hospital of all our cases was more than 10 days, and all had developed complication in the form of plasma leakage, hepatitis, Acute Respiratory Distress Syndrome (ARDS) and refractory shock. Marked thrombocytopenia, low hematocrit, raised liver enzymes, raised LDH, and hypo-albuminemia was present in all these fatal cases. There was no case with Acute Kidney Injury.

Multi-organ dysfunction such as AKI, ARDS, myocarditis, hepatitis, and meningo-encephalitis are common complication of scrub typhus. The occurrence of ARDS is high in scrub typhus patients who were diagnosed late and received antibiotics late[9].Patients in ARDS group had more severe disease in the form of deranged liver parameters, increased serum creatinine, elevated LDH, Creatinine Phospokinase (CPK), and serum lactate[10].Previous reports have shown close association of hypo albuminemia with severity of disesase[11]. All the cases in our report were female. Preponderance of female getting suffered from scrub typhus is also reported byBithu R[12].

Conclusion

Scrub typhus is an emerging disease with significant mortality. Non-specific symptoms and lack of diagnostic modalities heralds management challenges. Late presentation, with complications like ARDS, hepatitis, hypo-albuminemia, and shock results in mortality. Hence early clinical recognition and treatment is warranted to prevent morbidity and mortality.

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