

Re-emerging Zoonotic Infections: Leptospirosis and Scrub Typhus**Supriya Kumari¹, Arvind Kumar², Suman Kumar³**¹Senior Resident, Department of Microbiology, All India Institute of Medical Sciences, Deoghar, Jharkhand, India²Assistant Professor, Department of General Surgery, All India Institute of Medical Sciences, Deoghar, Jharkhand, India³Associate Professor, Department of Microbiology, All India Institute of Medical Sciences, Deoghar, Jharkhand, India

Received: 22-02-2026 / Revised: 23-03-2026 / Accepted: 25-04-2026

Corresponding Author: Dr. Arvind Kumar

Conflict of interest: Nil

Abstract:**Background:** Re-emerging zoonotic infections such as leptospirosis and scrub typhus are increasingly recognized as important causes of acute febrile illness in India. These infections often present with nonspecific clinical manifestations leading to delayed diagnosis and increased morbidity. Recent Indian data indicate rising surveillance and recognition of zoonotic diseases, especially scrub typhus and leptospirosis.**Aim:** To describe the clinical profile, laboratory findings, management, and outcomes of patients diagnosed with re-emerging zoonotic infections at a tertiary care centre.**Methods:** This retrospective case series included five patients admitted to All India Institute of Medical Sciences Deoghar with confirmed leptospirosis or scrub typhus between January 2025 and December 2025. Clinical presentation, laboratory parameters, imaging findings, treatment, and outcomes were analyzed.**Results:** Among the five cases, three patients had scrub typhus and two had leptospirosis. Fever was present in all cases (100%), followed by myalgia (80%), thrombocytopenia (60%), and hepatic dysfunction (40%). One patient with scrub typhus developed acute respiratory distress syndrome (ARDS), while one leptospirosis patient developed acute kidney injury. Early initiation of doxycycline or ceftriaxone resulted in favorable outcomes in four cases. One patient required intensive care admission. No mortality was observed.**Conclusion:** Re-emerging zoonotic infections continue to pose diagnostic challenges due to overlapping clinical manifestations. Early clinical suspicion, prompt serological testing, and timely initiation of appropriate antimicrobial therapy are essential for reducing complications and improving patient outcomes.**Keywords:** Leptospirosis, Scrub Typhus, Zoonotic Infections, Febrile Illness, Case Series.**DOI:** 10.25258/ijcpr.18.4.301

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Zoonotic infections are illnesses that humans can contract from animals directly or indirectly through contaminated food, water, vectors, or exposure to the environment. Zoonotic illnesses are a significant global public health concern, especially in tropical and subtropical nations where intimate human-animal contact, poor sanitation, occupational exposure, and climate conditions all contribute to the spread of disease. Leptospirosis and scrub typhus continue to be significant re-emerging zoonotic illnesses in India, according to current public health reports. Pathogenic spirochetes of the genus *Leptospira* are the cause of leptospirosis, a bacterial zoonosis. Exposure to water or soil tainted with the urine of infected animals, particularly rodents, is a frequent way for humans to become infected. Clinical signs and symptoms range from mild fever to severe Weil's disease, which is marked by shock,

pulmonary haemorrhage, jaundice, and renal failure. The main risk factors for transmission are occupational exposure, flooding, and inadequate sanitation [1].

The bite of an infected chigger mite can spread scrub typhus, which is caused by *Orientia tsutsugamushi*. In India, the illness has become a significant contributor to acute undifferentiated fever, especially during the monsoon and post-monsoon seasons. Fever, headache, myalgia, rash, lymphadenopathy, and the typical eschar are among the clinical signs, albeit many Indian individuals may not have eschar. Delays in diagnosis can lead to serious consequences such as acute respiratory distress syndrome, meningoencephalitis, acute kidney damage, and multiorgan failure [2].

Diagnostic challenges are frequently caused by the overlapping clinical characteristics of these illnesses, especially in settings with limited resources and laboratory facilities. Prolonged hospital stays and serious complications could result from delayed recognition. In order to lower morbidity and death, early suspicion and prompt treatment are essential. In order to characterise the clinical range, laboratory results, response to treatment, and results of patients with leptospirosis and scrub typhus at a tertiary care facility in eastern India, this case series was carried out [3].

Case Series

Case 1: Scrub Typhus with ARDS: A 32-year-old male farmer presented with high-grade fever, myalgia, dry cough, and breathlessness for 7 days. Examination revealed hypotension and bilateral crepitations. Laboratory investigations showed thrombocytopenia and elevated liver enzymes. IgM ELISA for scrub typhus was positive. Chest radiograph showed bilateral infiltrates suggestive of ARDS. The patient was treated with doxycycline and supportive intensive care. Clinical improvement was observed within 72 hours.

Case 2: Leptospirosis with Acute Kidney Injury: A 45-year-old male sanitation worker presented with fever, jaundice, oliguria, and calf muscle tenderness. Laboratory findings revealed elevated bilirubin, serum creatinine, and thrombocytopenia. Leptospira

IgM serology was positive. The patient received intravenous ceftriaxone, hydration, and renal supportive care with gradual recovery.

Case 3: Scrub Typhus with Hepatitis: A 26-year-old female presented with fever, abdominal pain, vomiting, and rash. Eschar was noted over the axillary region. Liver enzymes were markedly elevated. Scrub typhus IgM ELISA was positive. Doxycycline therapy resulted in rapid clinical recovery.

Case 4: Leptospirosis with Thrombocytopenia: A 41-year-old male agricultural worker presented with fever, headache, conjunctival suffusion, and thrombocytopenia following exposure to stagnant flood water. Serology confirmed leptospirosis. Intravenous antibiotics and supportive management resulted in complete recovery.

Case 5: Scrub Typhus with Uncomplicated Febrile Illness: A 38-year-old female presented with fever, headache, myalgia, and generalized weakness for 6 days. Laboratory investigations revealed mild thrombocytopenia and elevated C-reactive protein. Scrub typhus IgM ELISA was positive. The patient was treated with oral doxycycline, resulting in rapid clinical improvement, and was discharged without complications.

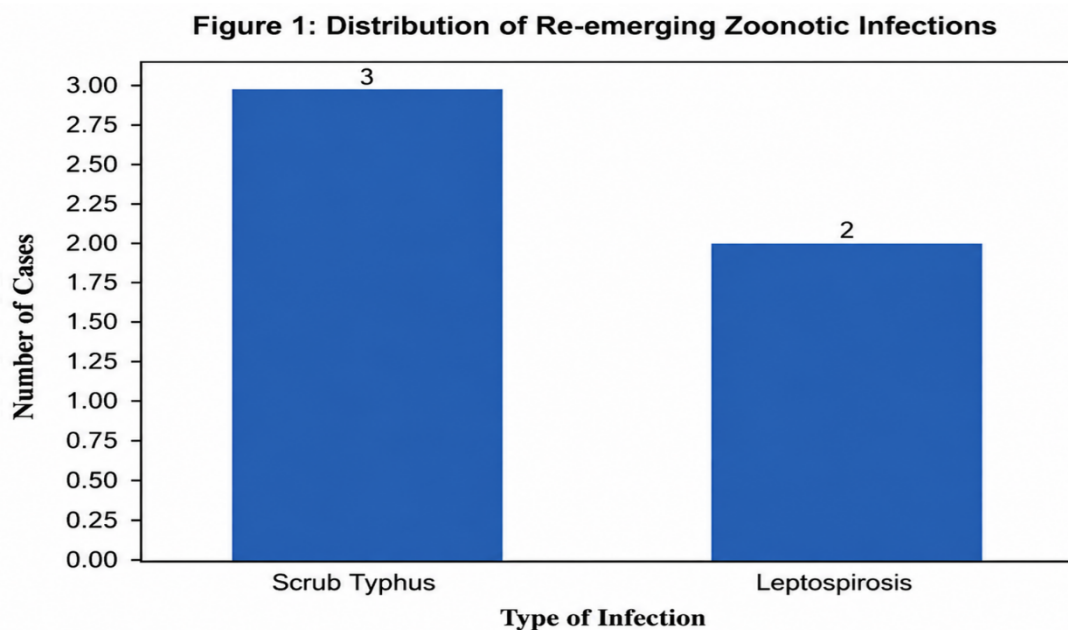


Figure 1: Distribution of re-emerging zoonotic infections

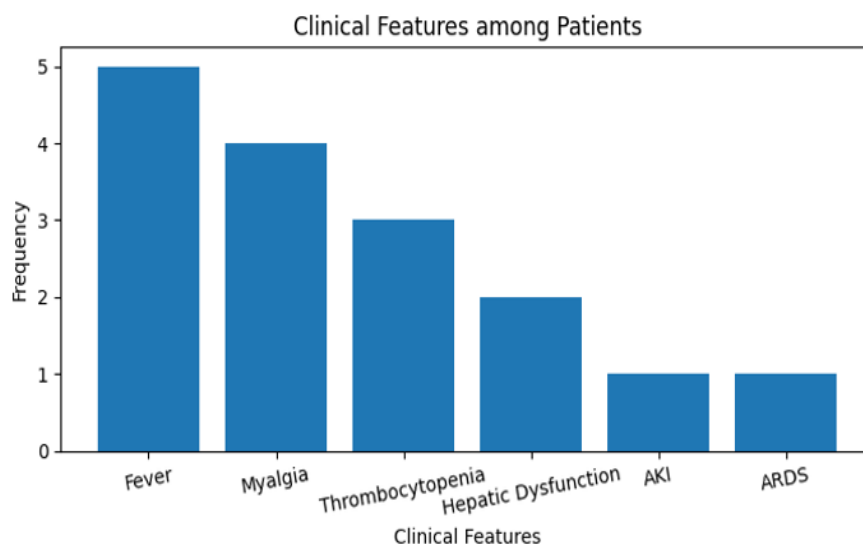


Figure 2: Clinical features among patients

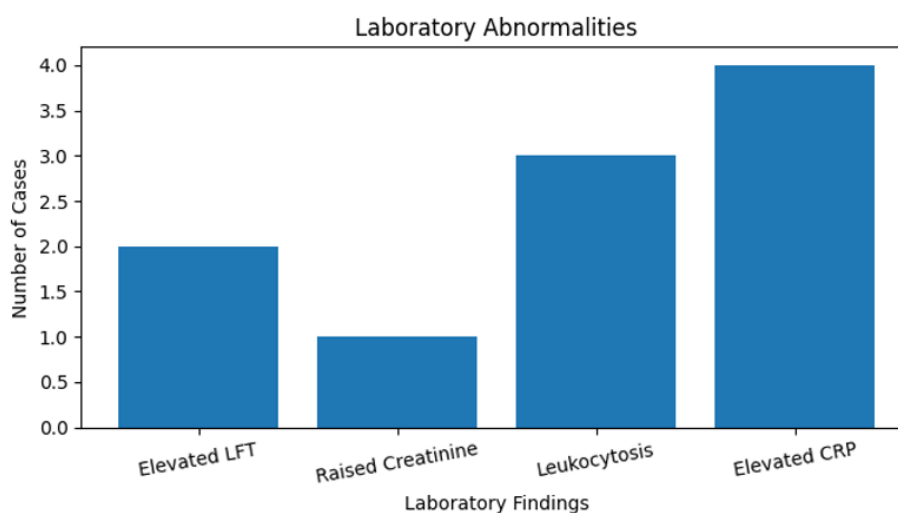


Figure 3: Laboratory abnormalities

Table 1: Distribution of Re-emerging Zoonotic Infections (n = 5)

Infection Type	Number of Cases	Percentage
Scrub Typhus	3	60%
Leptospirosis	2	40%

Table 2: Clinical Features among Patients

Clinical Feature	Frequency (n)	Percentage
Fever	5	100%
Myalgia	4	80%
Thrombocytopenia	3	60%
Hepatic dysfunction	2	40%
Acute kidney injury	1	20%
ARDS	1	20%

Table 3: Laboratory Findings

Laboratory Parameter	Abnormal Cases	Percentage
Elevated liver enzymes	2	40%
Raised serum creatinine	1	20%
Leukocytosis	3	60%
Elevated CRP	4	80%

Table 4: Clinical Outcome and Management

Outcome Variable	Number of Cases	Percentage
Recovered	4	80%
ICU admission	1	20%
Mortality	0	0%

Discussion

In India, reemerging zoonotic pathogens are becoming a more significant cause of acute fever. Due to better diagnostic facilities and increased clinician awareness, scrub typhus and leptospirosis are becoming more widely recognised, according to recent epidemiological research and surveillance reports. The most frequent presenting symptoms in the current case series were fever and myalgia [4]. However, the nonspecific clinical signs frequently coexist with viral illnesses, dengue, malaria, and enteric fever, delaying diagnosis. Hepatic dysfunction and pulmonary involvement were seen in scrub typhus patients in this cohort, which is in line with recent Indian investigations that frequently indicate multiorgan involvement in severe cases [5].

For those who work in agriculture, sanitation, or are exposed to contaminated water, leptospirosis is still a significant occupational illness. Typical clinical indicators in our patients were renal dysfunction, thrombocytopenia, calf muscle soreness, and conjunctival suffusion. In tropical areas, flooding and inadequate sanitation are known risk factors for leptospiral outbreaks [1].

For the majority of patients, prompt beginning of doxycycline-based therapy produced positive results. Early antibiotic treatment greatly lessens the severity of the illness and stops organ failure from developing. The significance of early serological testing and enhanced surveillance for reemerging zoonotic illnesses is also emphasised in recent publications. This case series emphasises the necessity of increased clinical awareness, particularly in endemic rural areas and during monsoon seasons. Early detection and treatment of these illnesses can be facilitated by enhancing laboratory diagnostic capabilities and public health surveillance.

Conclusion

In India, leptospirosis and scrub typhus are still major causes of acute fever. In addition to increasing the risk of serious sequelae such acute kidney injury, hepatitis, respiratory failure, and multiorgan dysfunction, their vague clinical presentations sometimes cause delays in diagnosis. Timely

diagnosis still depends on early clinical suspicion, especially in patients with a history of environmental or occupational exposure. While immediate beginning of therapy based on ceftriaxone or doxycycline greatly improves results, serological studies are crucial in confirming these infections. The current case series highlights the significance of strengthening zoonotic disease surveillance systems in endemic areas, improving diagnostic facilities, and raising physician awareness.

Reducing the burden of disease requires public health initiatives such as vector control, improved sanitation, occupational safety measures, and community education. To gain a better understanding of the epidemiology, clinical range, and long-term consequences of re-emerging zoonotic illnesses in India, further multicentre research with bigger sample sizes are advised.

References

1. Borah P, Das P, Bordoloi R, Begum R, Hazarika G, Saikia DP, et al. Prevalence of zoonotic diseases in the Northeastern region, one health perspective. *Anim Zoonoses*. 2025;1(2):178–87.
2. Kaur M, Sidhu SK, Singh K. Clinical and Epidemiological Profile of Common Vector-borne and Zoonotic Infections in Northwest Region of Punjab: A Retrospective Observational Study. *J Clin Diagnostic Res*. 2026;20(5):45–8.
3. Sanjiv Kumar, Sumant Swain, Preetha G S, B. S. Singh DA. Zoonotic Diseases in India. *Indian J Community Med*. 2020;45(February):1–2.
4. Dhiman RC, Tiwari A. Medical Reports and Case Studies Emergence of Zoonotic Diseases in India : A Systematic Review. *Med Rep Case Stud*. 2018;3(3):1–8.
5. Kaviprawin M, Raju M, Sakthivel M, Ramalingam A. Zoonotic disease outbreaks reported under India's Integrated Disease Surveillance Programme, 2018 – 2023: A cross-sectional analysis of national surveillance data. *Lancet Reg Heal - Southeast Asia* [Internet]. 2025;37:100601.