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Co-Infection of Dengue and Scrub Typhus with Concurrent Lower Urinary Tract Infection: A Complex Clinical Presentation

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ABSTRACT
This case report details a complex clinical presentation of a 51-year-old patient suffering from co-infection with Dengue, Scrub Typhus and a concurrent lower Urinary Tract Infection. The patient, whose symptoms included fever, myalgia and burning micturition presented a diagnostic challenge due to the overlapping clinical features of these diseases. He came to the hospital on Day 10 of fever with complains of burning micturition and fever not subsiding even after taking medication. Dengue NS1 test which was done on Day 4 of fever was positive. His hemogram revealed thrombocytopenia. Patient was started with necessary sensitive antibiotics after urine culture sensitivity report came. Gradually his burning sensation and TLC counts and platelet counts became normal, but his fever was not subsiding even until Day 16 inspite of his TLC and platelet count being normal. After a repeated meticulous clinical examination, a small eschar was noted on his right back thigh. Doxycycline was started immediately, to which his fever subsided on Day 18. Subsequently scrub typhus came positive. The case highlights the importance of considering multiple infectious etiologies in regions endemic to these diseases and underscores the significance of a comprehensive diagnostic approach to guide appropriate treatment strategies.

INTRODUCTION

In regions endemic to tropical diseases, healthcare providers often encounter a spectrum of infectious illnesses, presenting both diagnostic and clinical challenges. This case report sheds light on a particularly intricate and intriguing clinical scenario a patient with a co-infection of Dengue and Scrub Typhus, accompanied by a concurrent lower urinary tract infection.

Scrub typhus has been reported to have a community seroprevalence of 34.2% in India, and is responsible for 25.3% of cases of acute undifferentiated febrile illness (AUFI), with a high incidence of multiple organ dysfunction (17.4%) and case fatality (6.3%). Dengue seroprevalence in the general population and case fatality rate among laboratory- confirmed patients has been reported to be 56.U% and 2.6%, respectively, and the prevalence of laboratory-confirmed dengue infection among clinically suspected patients is 38.3%.

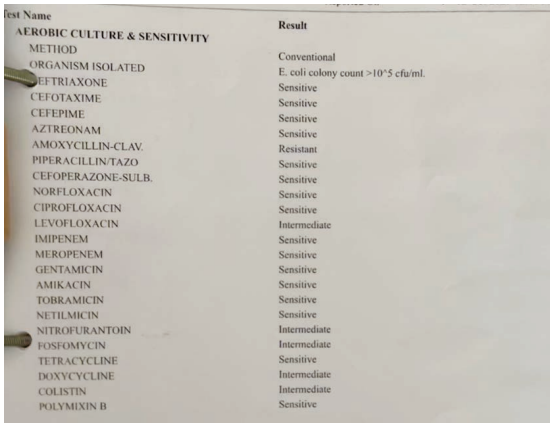
Dengue fever and Scrub Typhus, caused by different pathogens, share a set of overlapping symptoms, making their diagnosis a complex endeavor. Concurrently, the patient presented with lower urinary tract symptoms, further complicating the clinical picture and necessitating a comprehensive diagnostic approach. Dengue and scrub typhus are both vector borne disease but dengue is caused by Virus from group flaviviridae and scrub typhus is caused by bacteria Orientia tsutsugamushi.

Case report: A 51-year-old male presented to the hospital with complains of intermittent high-grade fever with burning micturition for the past 10 days. Fever was insidious in onset and high grade intermittent in nature. His dengue NS1 test which was done outside on Day 4 of fever was positive. There's no history of abdominal pain, vomiting, no other significant history.

On examination, patient was alert, conscious and cooperative. His temperature was 102.4 F , PR-124/ min, BP-110/70 mm Hg, RR-22 min, SpO2-U7% on room air. There was no maculopapular rash. No other remarkable systemic examination. Haematological and biochemistry revealed normochromic anemia, leukocytosis, thrombocytopenia:

- **Hb:** 13.1
- **TLC:** 14450
- **Platelet:** 70k
- **Dengue IGM antibody:** Reactive Urine R/E-pus cells + Urine C/S-
- ***E.Coli* (>100000):** Sensitive to pipercellin-Tazobactam

He was undergoing regular Blood work ups to monitor his Total leukocyte count and platelet count. After starting Inj PIPZO, his TLC slowly came down and



Test Name	Result
AEROBIC CULTURE & SENSITIVITY	
METHOD	Conventional
ORGANISM ISOLATED	E. coli colony count >10^5 cfu/ml.
CEFTRIAXONE	Sensitive
CEFOTAXIME	Sensitive
CEFEPIME	Sensitive
AZTREONAM	Sensitive
AMOXYCILLIN-CLAV.	Resistant
PIPERACILLIN/TAZO	Sensitive
CEFOPERAZONE-SULB.	Sensitive
NORFLOXACIN	Sensitive
CIPROFLOXACIN	Sensitive
LEVOFLOXACIN	Intermediate
IMIPENEM	Sensitive
MEROPENEM	Sensitive
GENTAMICIN	Sensitive
AMIKACIN	Sensitive
TOBRAMICIN	Sensitive
NETILMICIN	Sensitive
NITROFURANTOIN	Intermediate
FOSFOMYCIN	Intermediate
TETRACYCLINE	Sensitive
DOXYCYCLINE	Intermediate
COLISTIN	Intermediate
POLYMIXIN B	Sensitive

Fig. 1: Aerobic culture

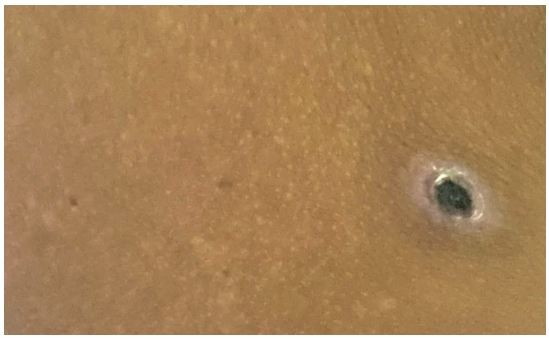


Fig. 2: Antibiotic Doxycycline

platelet count started increasing. But his fever was not subsiding, and he was complaining of severe body ache even on Day of 16 of fever. After repeated meticulous clinical examination and through history taking, we found that he had a history of travel to a forest area near the borders of Bangladesh in the last 1 month and also, we noted a small eschar on his right back thigh. We started Antibiotic Doxycycline immediately. Eventually his fever subsided on Day 18. Subsequently His scrub typhus IGM (ELISA) came positive (Fig 1and 2).

After adding doxycycline, the patient's condition improved within 24 hrs and there was no spike of fever after Day 18. He was well and most of the lab parameters were normal when she came later for a follow up after 1 week.

DISCUSSIONS

In West Bengal, India, a challenging case has emerged involving a 51-year-old male patient presenting with a coinfection of scrub typhus, dengue, and a urinary tract infection (UTI). Scrub typhus, caused by the bacterium Orientia tsutsugamushi and transmitted by chiggers, is sporadically found in forested and hilly areas of the region. Dengue, on the other hand, is more prevalent, with its transmission facilitated by Aedes mosquitoes in West Bengal's tropical climate. UTIs, often attributed to *Escherichia*

coli (E. coli), are also a common concern. The patient's symptoms included high-grade fever, severe headache, myalgia, urinary discomfort and the presence of an eschar. Diagnostic tests such as ELISA (IGM dengue antibody and IGM scrub typhus antibody), urine culture and sensitivity were used to confirm scrub typhus, dengue and a urine culture for the UTI. The treatment approach involved antibiotic doxycycline, for scrub typhus, supportive care for dengue to manage fluid and electrolyte balance and specific antibiotic Pipzo for the UTI based on culture results. This complex case underscores the necessity of a multidisciplinary approach, importance of history taking, early diagnosis and thorough follow-up in a region where these infections coexist, highlighting the intricacies of dealing with coinfections in clinical practice.

CONCLUSION

History taking is very important in a case scenario even if you already have a confirmed diagnosis. Scrub typhus can present with lower urinary tract infection, but the disease won't respond to usual antibiotics protocol. Addition of doxycycline empirically to the initial regimen will result in rapid clinical improvement. Co-infection with other tropical diseases such as dengue is also common, hence it is important to perform a panel of tests based on travel history and as well as local endemicity.

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Consent: Written informed consent was obtained from the patient for publication of this case report.

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