



Case Report

A suspected surgical case of acute abdomen: A case report of scrub typhus

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ARTICLE INFO

Keywords:

Scrub Typhus
Abdominal Pain
Fever of Unknown Origin
Multiple Organ Failure
Septic Shock

ABSTRACT

Introduction: Scrub typhus presents with diverse clinical manifestations which range from sub-clinical disease to organ failure and fatal disease.

Case presentation: The patient presented with fever followed by acute abdominal pain and later developed septic shock with multi-organ failure. Radiological evaluations were normal, however, on thorough physical examination, an eschar was found in her right inguinal region.

Clinical discussion: Aside from classical clinical symptoms, it can also involve various organs, most commonly of respiratory, cardiovascular and hepatic systems. Additionally, suspected patients should be thoroughly examined for the presence of an eschar, especially over the covered areas such as the groin, genitalia, infra-mammary area and axilla.

Conclusion: Scrub typhus should be considered in all patients from an endemic area presenting as acute undifferentiated febrile illness associated with organ involvement. Positive finding of an eschar and high index of suspicion for the various presentations of scrub typhus can avoid unnecessary surgical exploration and aid in prompt diagnosis and treatment.

1. Introduction

Scrub typhus is a mite-borne rickettsial zoonosis caused by *Orientia tsutsugamushi* [1]. It is endemic in the “tsutsugamushi triangle”, which is framed by Japan, Taiwan, China, and South Korea to the north, India and Nepal to the west, and Australia and Indonesia to the south [2]. It is one of the emerging infectious diseases in Nepal [3,4].

Classical clinical features of scrub typhus include high fever, malaise, headache, cough, generalized lymphadenopathy and maculopapular rash [5]. The bite from an infected chigger (larva of trombiculid mite) commonly results in a localized cutaneous necrosis producing a painless papule called eschar [6]. The possible complications are jaundice, splenomegaly, renal failure, pneumonia, Acute Respiratory Distress Syndrome (ARDS), septic shock, myocarditis, meningo-encephalitis and multiorgan failure [5,7].

Here we present a case of scrub typhus presenting as acute abdomen with thrombocytopenia, septic shock and multi-organ failure.

2. Method

We report this case in line with the updated consensus-based surgical

case report (SCARE) guidelines [8].

3. Case presentation

A 37-year-old female presented to the emergency department with the complaint of severe abdominal pain for 2 days. She was referred from Nepalgunj for a suspected surgical cause of acute pain abdomen and further management. The pain was acute in onset, diffuse all over the abdomen and was associated with few episodes of vomiting and nausea followed by reduced appetite. She did not have jaundice or hematemesis. Three days prior to pain abdomen, the patient had a history of fever for which she had been taking over-the-counter (OTC) drugs from her local pharmacy. The patient had a past history of a laparoscopic cholecystectomy, one year ago, for symptomatic gallstone disease and her postoperative period was uneventful.

On her clinical examination, she was afebrile and in acute distress due to pain with tachycardia and tachypnea. Her vitals were suggestive of septic shock with blood pressure of 80/40 mmHg on presentation. However, after fluid resuscitation, her vitals were stabilized. The abdomen was distended and diffusely tender. On rectal examination, normal tone, finger stained with stool and no palpable mass were noted.

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<https://doi.org/10.1016/j.amsu.2022.103329>

Received 27 December 2021; Received in revised form 22 January 2022; Accepted 25 January 2022

Available online 29 January 2022

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She had features of Systemic Inflammatory Response Syndrome (SIRS) with significant hypoxia. A thorough physical examination revealed an eschar over the right inguinal region (Fig. 1).

Laboratory investigation revealed an elevated white blood cell count of 19.9×10^3 cells/ μL with 62% neutrophils and platelet count of 84×10^3 cells/ μL (thrombocytopenia). Biochemical tests showed creatinine: 1.5 mg%, total bilirubin: 1.5 mg%, direct bilirubin: 0.2 mg%, protein: 5.4 g%, albumin: 2.6 g%, Serum Glutamic Oxaloacetic Transaminase (SGOT): 108 IU/L, Serum Glutamic Pyruvic Transaminase (SGPT): 27 IU/L, Alkaline phosphatase: 167 IU/L.

On radiological examination, X-ray abdomen erect/supine and Ultrasound abdomen/pelvis were unremarkable. Contrast Enhanced Computed Tomography (CECT) abdomen was normal with minimal fluid collection in the pelvis while CECT chest showed minimal bilateral pleural effusion. Based on the presence of an eschar and evidence of multi-organ failure requiring invasive ventilation and resuscitation, she was diagnosed to have scrub typhus. Then, she was referred to the department of internal medicine and started on oral Doxycycline and intravenous Azithromycin. She showed significant improvement and was weaned off the ventilator in two days. The diagnosis of scrub typhus was confirmed by a positive IgM Enzyme Linked Immunosorbent Assay (ELISA). She was discharged after one week and was afebrile and doing well on a two-week follow-up. The timeline of events and interventions is given below (Fig. 2).

4. Discussion

Scrub typhus presents with diverse clinical manifestations which range from sub-clinical disease to organ failure and fatal disease. Scrub typhus should be an important differential diagnosis in patients presenting with acute undifferentiated febrile illness associated with organ involvement, most commonly respiratory, cardiovascular and hepatic dysfunction [5]. However, few cases of scrub typhus presenting as acute abdominal pain [9,10] have been reported. In such cases, surgical exploration under an initial impression of acute cholecystitis and acute appendicitis was done [10,11]. Another patient with features of acute pancreatitis with a pancreatic abscess was later found to have scrub typhus [12]. A case of scrub typhus with acute abdomen, septic shock and DIC in a child has also been reported [13].

Our case is a female from a rural residential area. She frequently works in the garden and fields near her home. All of these are risk factors significantly associated with acquiring a scrub typhus infection [14]. Furthermore, an analytical study by George et al. found scrub typhus cases were more likely to rest on grass/mud without a mat and to have

rodents in their house. Cases were also less likely to have a toilet within the house and to change undergarments or clothes before sleeping [15].

A necrotic eschar at the inoculating site of the mite is a pathognomic sign. A retrospective analysis by Kundavaram et al. [16], examined the distribution of eschars in 418 positive scrub typhus patients. The eschar was located on the chest and abdomen among 42.3% of females and on the axilla, groin and genitalia in 55.8% of males. However, eschars are also found in unusual sites such as the cheek, earlobe, and dorsum of the foot [16]. As the bite from an infected chigger is painless, patients are usually unaware of the presence of an eschar. Therefore, in cases of acute febrile illness in endemic areas, a thorough examination for the eschar should be done, including covered areas such as the groin, genitalia, infra-mammary area, and axilla.

A total of 1271 cases of scrub typhus were reported to the Epidemiology and Disease Control Division (EDCD) of Nepal from July 17 to November 3 of 2019 alone [4]. A nationwide outbreak of scrub typhus was declared as the cases were detected in 63 out of the 77 districts of Nepal [4]. The case fatality rate was 5.7% in 2015, which declined to 1.1% in 2017 [3]. Seasonal trend was observed with a peak during August and September [3]. Over the past few years, scrub typhus has been an emerging public health problem in Nepal, with detection of *O. tsutsugamushi* in humans, animals, and chigger mites throughout the country with frequent outbreaks [3,4]. Therefore, a high degree of clinical suspicion of the various presentations of scrub typhus is required in Nepal and other endemic areas for timely diagnosis and treatment.

5. Conclusion

The presentation of scrub typhus can be non-specific or associated with pain abdomen or other organ dysfunction. Therefore, scrub typhus should be considered in all patients who live in or have traveled to an endemic area presenting as acute undifferentiated febrile illness associated with organ involvement. Additionally, such patients should be thoroughly examined for the presence of an eschar, especially over the covered areas such as the groin, genitalia, infra-mammary area and axilla. Positive finding of an eschar and high index of suspicion for the various presentations of scrub typhus can avoid unnecessary surgical exploration and aid in prompt diagnosis and treatment.

Ethical approval

Not required in our case.

Sources of funding

None.

Author contribution

Sunil Basukala (SB) = Conceptualization, Supervision.
Ayush Tamang (AT), Shriya Sharma (SS), Ujwal Bhusal (UB) = Writing- Original Draft.
SB, AT, SS, UB= Visualization, Writing-review and editing.
All the authors read and approved the final manuscript.

Registration of research studies

1. Name of the registry: Not applicable
2. Unique Identifying number or registration ID: Not applicable
3. Hyperlink to your specific registration (must be publicly accessible and will be checked): Not applicable

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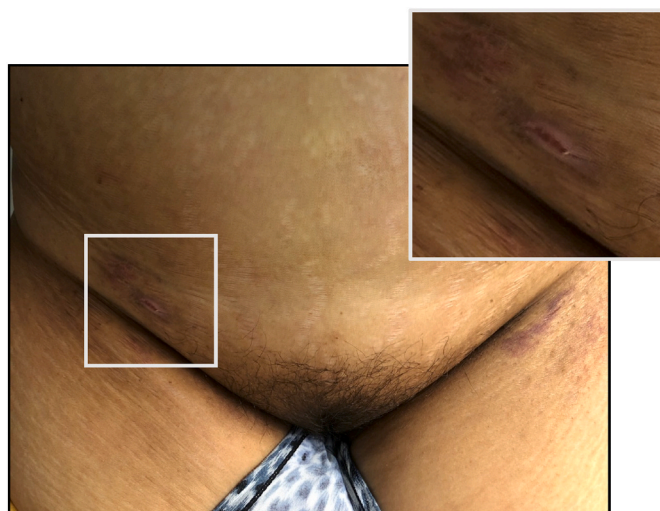


Fig. 1. Eschar in the right inguinal region on the anterior abdominal wall.

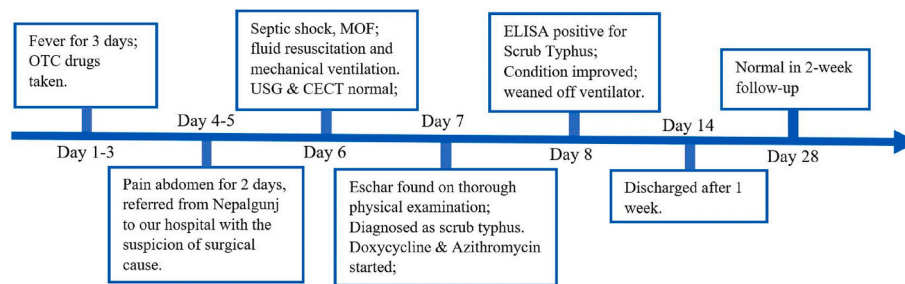


Fig. 2. Timeline of events and interventions (OTC: over-the-counter; MOF: Multi-organ failure; USG: ultrasonography; CECT: Contrast Enhanced Computed Tomography; ELISA: Enzyme Linked Immunosorbent Assay).

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Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Declaration of competing interest

No any conflict of interest.

Acknowledgments

The authors wish to acknowledge the patient included in this report. We would also like to thank our head of department of surgery at Shree Birendra Hospital, Lt. Col. Dr. Narayan Thapa, for his guidance for this case report.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.103329>.

References

- [1] A. Tamura, N. Ohashi, H. Urakami, S. Miyamura, Classification of Rickettsia tsutsugamushi in a new genus, *Orientia* gen. nov., as *Orientia tsutsugamushi* comb. nov, *Int. J. Syst. Bacteriol.* 45 (1995) 589–591, <https://doi.org/10.1099/00207713-45-3-589>.
- [2] A.R. Chogle, Diagnosis and treatment of scrub typhus—the Indian scenario, *J. Assoc. Phys. India* 58 (2010) 11–12.
- [3] M. Dhimal, S.P. Dumre, G.N. Sharma, P. Khanal, K. Ranabhat, L.P. Shah, B.K. Lal, R. Jha, B.P. Upadhyaya, B. Acharya, S.K. Shrestha, S.A. Davidson, P. Charoensinphon, K.B. Karki, An outbreak investigation of scrub typhus in Nepal: confirmation of local transmission, *BMC Infect. Dis.* 21 (2021) 193, <https://doi.org/10.1186/s12879-021-05866-6>.
- [4] Epidemiology and Disease Control Division, Scrub typhus update 2076/077. <http://edcd.gov.np/news/download/scrub-typhus>, 2019.
- [5] S. Rajapakse, P. Weeratunga, S. Sivayoganathan, S.D. Fernando, Clinical manifestations of scrub typhus, *Trans. R. Soc. Trop. Med. Hyg.* 111 (2017) 43–54, <https://doi.org/10.1093/trstmh/trx017>.
- [6] X.D. Pham, Y. Otsuka, H. Suzuki, H. Takaoka, Detection of *Orientia tsutsugamushi* (Rickettsiales: rickettsiaceae) in unengorged chiggers (Acari: trombiculidae) from Oita Prefecture, Japan, by nested polymerase chain reaction, *J. Med. Entomol.* 38 (2001) 308–311, <https://doi.org/10.1603/0022-2585-38.2.308>.
- [7] J.V. Peter, T.I. Sudarsan, J.A.J. Prakash, G.M. Varghese, Severe scrub typhus infection: clinical features, diagnostic challenges and management, *World J. Crit. Care Med.* 4 (2015) 244–250, <https://doi.org/10.5492/wjccm.v4.i3.244>.
- [8] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, A. Kerwan, A. Thoma, A.J. Beamish, A. Noureldin, A. Rao, B. Vasudevan, B. Challacombe, B. Perakath, B. Kirshtein, B. Ekser, C.S. Pramesh, D.M. Laskin, D. Machado-Aranda, D. Miguel, D. Pagano, F. H. Millham, G. Roy, H. Kadioglu, I.J. Nixon, I. Mukherjee, J.A. McCaul, J. Chi-Yong Ngu, J. Albrecht, J.G. Rivas, K. Raveendran, L. Derbyshire, M.H. Ather, M. A. Thorat, M. Valmasoni, M. Bashashati, M. Chalkoo, N.Z. Teo, N. Reason, O. J. Muensterer, P.J. Bradley, P. Goel, P.S. Pai, R.Y. Affi, R.D. Rosin, R. Coppola, R. Klappenbach, R. Wynn, R.L. De Wilde, S. Surani, S. Giordano, S. Massarut, S. G. Raja, S. Basu, S.A. Enam, T.G. Manning, T. Cross, V.K.L. Karanth, V. Kasivisvanathan, Z. Mei, The SCARE 2020 guideline: updating consensus surgical CAse REport (SCARE) guidelines, *Int. J. Surg.* 84 (2020) 226–230, <https://doi.org/10.1016/j.ijsu.2020.10.034>.
- [9] S.K. Mahajan, S. Babu, D. Sharma, D. Singh, A. Kanga, S.S. Kaushal, Scrub typhus presenting as acute abdomen, *Trop. Doct.* 41 (2011) 185–186, <https://doi.org/10.1258/td.2011.110079>.
- [10] A.P. Kundavaram, S. Das, V.M. George, Scrub typhus presenting as an acute abdomen, *J. Global Infect. Dis.* 6 (2014) 17–18, <https://doi.org/10.4103/0974-777X.127943>.
- [11] C.H. Yang, T.G. Young, M.Y. Peng, G.J. Hsu, Unusual presentation of acute abdomen in scrub typhus: a report of two cases, *Zhonghua Yixue Zazhi* 55 (1995) 401–404.
- [12] S.-Y. Yi, J.-H. Tae, Pancreatic abscess following scrub typhus associated with multiorgan failure, *World J. Gastroenterol.* 13 (2007) 3523–3525, <https://doi.org/10.3748/wjg.v13.i25.3523>.
- [13] P.-H. Chang, Y.-P. Cheng, P.-S. Chang, C.-W. Lo, L.-H. Lin, C.-F. Lu, W.-H. Chung, A case report and literature review of scrub typhus with acute abdomen and septic shock in a child—the role of leukocytoclastic vasculitis and granulysin, *Am. J. Dermatopathol.* 40 (2018) 767–771, <https://doi.org/10.1097/DAD.0000000000001167>.
- [14] R. Gautam, K. Parajuli, J.B. Sherchand, Epidemiology, risk factors and seasonal variation of scrub typhus fever in Central Nepal, *Trav. Med. Infect. Dis.* 4 (2019), <https://doi.org/10.3390/tropicalmed4010027>.
- [15] T. George, S. Rajan, J. Peter, S. Hansdak, J. Prakash, R. Iyyadurai, A. Mathuram, B. Antonisamy, K. Ramanathan, T. Sudarsanam, Risk factors for acquiring scrub typhus among the adults, *J. Global Infect. Dis.* 10 (2018) 147–151, https://doi.org/10.4103/jgid.jgid_63_17.
- [16] A. Kundavaram, A. Jonathan, S. Nathaniel, G. Varghese, Eschar in scrub typhus: a valuable clue to the diagnosis, *J. Postgrad. Med.* 59 (2013) 177–178, <https://doi.org/10.4103/0022-3859.118033>.