Case Report

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Scrub Typhus a Re-emerging Disease in Children's Hospital

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ABSTRACT

Scrub typhus is a form of typhus caused by the intracellular parasite Orientia tsutsugamushi a gram-negative alpha protea bacterium of the family rickettsiaceae first isolated and identified in 1930 in Japan. It is frequently diagnosed in South Asian countries including Nepal. After the earthquake in Nepal, a sudden upsurge in scrub typhus cases was reported. it is a mild to life-threatening disease with a case fatality rate without treatment as high as 50%. Disease presentation consists of abrupt high fever, severe headache, lymphadenopathy, generalized myalgia, eschar, and rashes. Diagnosis is generally made on clinical grounds alone, the cheapest and most easily available serological test is the Weil- Felix test but this is notoriously unreliable. Without treatment, the disease is often fatal since the use of antibiotics case fatalities have decreased from 4-40% to less than 2%. Commonly used is doxycycline or tetracycline but chloramphenicol is an alternative. No known vaccine is available to date.

INTRODUCTION

Scrub typhus also known as bush typhus is a form of typhus caused by the intracellular parasite Orientia tsutsugamushi a gram-negative alpha protea bacterium of the family Rickettsiaceae first isolated and identified in 1930 in Japan[1]. Scrub typhus is an ignored tropical disease and a leading cause of undifferentiated febrile illness in the Tsutsugamushi triangle. It is frequently diagnosed in South Asian countries including Nepal. After the earthquake in Nepal, a sudden upsurge in scrub typhus cases was reported[2].

Disease Prevalence: Scrub typhus is today's most important rickettsia disease worldwide, approximately one million cases occur each year and over one billion people are at risk of the disease, it is a mild to life-threatening disease with a case fatality rate without treatment as high as 50%. Disease presentation consists of abrupt high fever, severe headache, lymphadenopathy, generalized myalgia, eschar, and rash seen a few days after the chigger bite but before disease presentation and is, therefore, an important early sign associated with scrub typhus. The ultimate target cells are the endothelial cells so all tissues and organs of the body can be infected thus the presentation of various manifestations of scrub typhus including pneumonitis, mild hepatitis, tinnitus, rashes, disseminated intravascular coagulation, and meningoencephalitis can occur [3].

Diagnosis is generally made on clinical grounds alone, overshadowing of the diagnosis is quite often as the clinical symptoms overlap with other infectious diseases such as dengue fever, paratyphoid, and pyrexia of unknown origin. If the eschar can be identified it is quite diagnostic of scrub typhus but this can be unreliable on dark skin. Where doubt exists the diagnosis may be confirmed by a laboratory test such as serology. The cheapest and most easily available serological test is the Weil- Felix test but this is notoriously unreliable. Other methods include culture and polymerase chain reaction, which are not routinely available. Without treatment, the disease is often fatal since the use of antibiotics case fatalities have decreased from 4-40% to less than 2%. The drug most commonly used is doxycycline or tetracycline but chloramphenicol is an alternative, azithromycin is an alternative in children, and ciprofloxacin is also used except in pregnancy. No known vaccine is available to date[1].

Objective of the case report: The objective was to investigate on reemerging of the scrub typhus disease among children.

Case Report: A 12-year-old female child from Chaudhary family was admitted to PICU on 2077/08/18 in Children's Hospital of Kathmandu with a diagnosis of SCRUB TYPHUS. She was referred from one of the Medical College from western Nepal with a history of fever for 9 days, pain abdomen, loose bowel movement, and decreased appetite for 5 days with rashes in the chest and abdomen. She was well 10 days ago and later developed a fever during the nighttime associated with chills. There she was managed with antipyretics for around 5 days, later she complained of abdominal pain associated with loose motion and non-projectile non-bilious vomiting after each feed. She had no significant known history of past childhood illness and hospital admission. She had completed all the immunizations as per the National Immunization Schedule and has no known allergy to medications and food. Regarding birth history, she was born at full term at home and no complication was encountered during birth and later on. Her growth and development followed the normal pattern, was breastfed for 3 years, and also showed normal social and intellectual development.

Assessment Findings: On assessment, her general appearance was normal, had rashes over the chest and abdomen, had a fever, and complained of malaise & dyspnea on activity. She had a loss of appetite and constipation too. She also had pitting edema on her lower limbs and periorbital edema along with fatigue and headache. Diagnostic evaluations were carried out; routine investigations which include total blood counts, blood culture, renal function test, urine routine and culture, chest X-ray, scrub typhus IgM ELISA including serological test were done. The reports showed increased WBC counts, ESR elevated, other hemoglobin, differential counts, blood urea, creatinine, sodium potassium were within normal range, and HIV. HbsAG and HCV tests were found to be negative, blood ANA was negative but scrub typhus IgM ELISA was positive. Urine and blood culture showed no growth. Based on the laboratory findings and clinical features presented diagnosis made was scrub typhus. Although IgM IFA is considered the gold standard test for the diagnosis of scrub typhus, it is relatively expensive, and requires trained personal and a microscope with fluorescence filters, scrub typhus IgM ELISA is the best alternative for resource limited endemic countries like Nepal.[4]

Therapeutic management included

- Antipyretics Tab Paracetamol 500mg QID
- Tab Ranitidine 150 mg BD
- Antibiotics included: Injection of Meropenum 800mg IV TDS
- Injection Doxycycline 90mg IV BD
- Injection Linezolid 400mg IV TDS

Nursing Management

Assessment: Complete history taking and physical examination was carried out, review of investigation was done, and nursing diagnosis were made and care was provided.

Nursing Diagnosis

- Fever due to infection, as evidenced by increased temperature, flushed face, and dry mouth.
- Irritability due to pain, as evidenced by frequently changing position and complaining of body aches.
- Risk of dehydration due to less fluid intake, evidenced by dry mouth and decreased urine output.
- Risk of malnutrition due to less intake of food, as evidenced by decreased appetite.
- Risk of infection due to low immunity, as evidenced by prolonged illness and hospitalization.
- Lack of knowledge regarding the disease process, as evidenced by frequently asking questions.

Interventions

Fever management: Regular monitoring of vitals, provided acetaminophen for fever, and encouraged adequate hydration.

Comfort management: Ensure the child is comfortable with supportive care, including cool compresses for fever and rashes. Administered pain medication as needed for headaches and muscle aches, provided comfort measures, including hydration and a quiet environment. Collaborated with other health care professionals to ensure optimal care.

Fluid management: Offered fluids to drink by explaining the importance of fluid intake. Encouraged to take soups of preferred flavors. Urine output was measured, and it was approximately 1500 mL per 24 hours; later, it increased up to 2000 mL per 24 hours.

Nutrition Management: Provided nutritious, soft, and easily digestible foods: rice porridge, vegetable soups, coconut water, and yogurt. Spicy, oily, and junk foods were avoided.

Complication management: Monitored for signs of complications like ARDS, and organ failure: vitals monitored regularly, intake and output maintained daily, and was monitored closely. Prescribed medications were administered timely.

Stress management: Explained about the disease, treatment plan, importance of medication adherence, and preventive measures to the family members and the child as well. Explained about the complications and features of complications, as well as disease prognosis and signs of improvement.

Daily Progress: On day one of admission the patient had a fever and difficulty in breathing. All the investigations were sent. Antipyretic Paracetamol was given, IV antibiotics started and oxygen saturation was maintained with O2 inhalation through a nasal cannula at oxygen 2 liters per minute. Nebulization with salbutamol was also given. The patient was given a diet as tolerated and all routine nursing care was provided. On day two also patient had a fever but the difficulty in breathing was minimal and Spo2 was maintained in room air, no need to have oxygen supplementation, and continued the same treatment. On the third day patient's general condition was improved had no fever and was feeling good. All the reports were collected, showed no growth in urine and blood culture. Blood for scrub typhus ELISA was reactive.

Convalesce period: The patient's general condition was improving so IV antibiotics were continued for 5 days other conservative management was done and the patient was discharged on the seventh day of admission. On discharge Tab. Ranitidine 150 mg BD for 2 more days and Tab. Paracetamol 500 mg SOS was prescribed. Other needed health teaching on follow-up visits, maintaining personal hygiene and environment sanitation, and proper nutrition was given.

Conclusion: Scrub typhus is one of the most widespread rickettsial diseases. It is endemic in Northern Japan, Southeast Asia, the Western Pacific Islands, and eastern Australia. The outbreak has been reported among the soldiers in Assam during World War II in India. It has re-emerged in India. In Nepal, there was an Outbreak in 2015, and it is a reemerging infectious disease of Nepal that often poses a threat to children. Difficulty in clinical diagnosis, as the early signs and symptoms of the disease mimic other viral illnesses, lack of laboratory methods, and under diagnosis of the disease, is a challenging situation.

Going through this case study helped to get knowledge regarding scrub typhus as a reemerging disease as a rickettsial disease that is often confused with other viral illnesses. The symptoms are minor, but if left undiagnosed or untreated, they may lead to major complications, including mortality. Minor activities like environmental sanitation and maintaining personal hygiene can prevent the disease. Nurses need to collaborate and coordinate with other members of the health care team to meet the needs of the patients.

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