Scrub typhus presenting as pneumonia in a 12-year-old girl

Sir,

Scrub typhus is an emerging zoonotic disease caused by *Orientia tsutsugamushi* and transmitted by the bite of infected larva of leptotrombiculid mite species. Rodents act as reservoirs and peak transmission is often seen following rainy season. Children and adults are equally affected and complications such as meningoencephalitis, acute kidney injury, and pneumonitis have been reported. A high index of suspicion is required for the diagnosis of scrub typhus given the varied manifestations of the disease. The presence of a pathognomonic skin lesion known as eschar helps in the diagnosis of this condition; however, it can be absent or may be overlooked for instance being in a remote site not easily visible or being mistaken for other skin conditions such as pyodermal lesions which are more common. This case report highlights the importance of recognizing pneumonia as a presenting feature of scrub typhus and issues related to its management.

A 12-year-old girl was brought with history of fever with cough headache and myalgia for 5 days duration and breathing difficulty of 2 days duration. On examination, she was febrile (temperature 103°F), toxic with significantly enlarged left cervical and axillary lymph nodes, pulse rate of 102/min, respiratory rate of 40/min, and blood pressure of 110/60 mmHg. She had an eschar on the left posterolateral aspect of her chest wall [Figure 1]. Systemic examination

revealed normal cardiovascular status, bilateral fine creptitations on infrascapular and infraaxillary regions with SpO_2 of 88–90% on room air. She had a soft liver palpable 5 cm below the right costal margin and a soft spleen palpable 1 cm below the left costal margin. Her neurological status was normal. Her investigations are summarized in Table 1. Chest radiograph revealed normal-sized heart with linear streaky opacities in bilateral lower zones suggestive of interstitial edema. An echocardiogram was normal. Enzyme-linked immunosorbent assay for scrub typhus IgM was strongly positive. The child was treated as scrub typhus pneumonia with oral doxycycline, hypertonic saline nebulization, and oxygen. In view of persistent fever spikes >72 h after starting doxycycline with continuing respiratory distress, antibiotics were changed to oral azithromycin. Within 48 h of changing antibiotic, fever spikes decreased and respiratory distress started decreasing, and the child was weaned of oxygen and discharged home on oral azithromycin for three more days. At follow-up 1-week later, she was totally well and asymptomatic.

Respiratory complications of scrub typhus have been variably reported in the literature with interstitial pneumonia at one end of spectrum to fatal acute respiratory distress syndrome (ARDS) at the other end.[1] Direct endothelial damage to the pulmonary circulation has been postulated to be the pathology associated with pulmonary involvement in scrub typhus. Symptoms and signs of pulmonary involvement include cough, tachypnea, crepitations, wheeze, and rarely pulmonary hemorrhage. The chest radiograph abnormalities include interstitial pneumonitis, cardiomegaly, pulmonary edema, pleural effusion, hilar lymphadenopathy, and focal atelectasis.[2] There is a predilection for lower lobe involvement in scrub typhus pneumonitis. Massive airspace consolidation due to scrub typhus has also been reported in a 9-year-old girl who improved dramatically after treatment with doxycycline.[3] ARDS developing in the context of septic shock and multiorgan dysfunction syndrome has been shown to be associated with high mortality. Rapid disease progression and increased severity have been attributed to the delay in initiation of appropriate antimicrobial therapy and supportive care to these children. The identification of eschar helps in early diagnosis and initiating appropriate treatment. The usual sites of predilection for eschar are inner thigh, groin, scrotum, trunk, axilla, neck, retroauricular area, and rarely in ear canal and scalp where they are likely to be missed. Once the diagnosis is made, the choice of antibiotic is largely between doxycycline and azithromycin; however, other drugs such as rifampicin, quinolones, and chloramphenicol have also been used for treatment of scrub typhus.[4,5] Due to concerns about emerging resistance to doxycycline and reservations on its use in young children, azithromycin is increasingly used in children with scrub typhus and has been found to be safe and effective.[4]

Figure 1: Eschar in left posterolateral chest wall

Table 1: Summary of investigations

Haemoglobin	10.2g/dl
Total leukocyte count	14,800 cells/cu.mm
Differential leukocyte count	Polymorphs 88%, Lymphocytes 12%
Platelet count	1,58,000/cu.mm
ESR	30 mm/Hour
Blood urea	36 mg/dl
Serum creatinine	0.7 mg/dl
Serum total protein	5.4 g/dl
Serum albumin	3 g/dl
Aspartate transaminase	67 IU
Alanine transaminase	252 IU
Serum alkaline phosphatase	240 IU
Bilirubin (total)	0.7 mg/dl

ESR: Erythrocyte sedimentation rate

To conclude, pneumonia can be the presenting feature of scrub typhus and physicians caring for children should be aware of such presentation. Conventional drugs for treatment of pneumonia might not be beneficial to them, and delay in institution of appropriate chemotherapeutic agent is often fraught with rapid deterioration in the clinical condition and even death of the child. One should carefully look for eschar on physical examination as it is the single most important and useful clinical feature that hastens the diagnosis of scrub typhus.

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Conflicts of interest
There are no conflicts of interest.

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