

DISTRIBUTION OF ESCHAR IN CHILDREN WITH SCRUB TYPHUSBahubali D. Gane¹, P. Natarajan², Hiremath P. B³**HOW TO CITE THIS ARTICLE:**

Bahubali D. Gane, P. Natarajan, Hiremath P. B. "Distribution of Eschar in Children with Scrub Typhus". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 69, August 27; Page: 11953-11956, DOI: 10.14260/jemds/2015/1725

ABSTRACT: Scrub typhus is caused by an intracellular bacterium, *Orientia tsutsugamushi*. It causes a disseminated vasculitic and perivascular inflammatory lesions. These lead to significant vascular leakage and end-organ injury. Eschar is the site of inoculation. It is painless and non-pruritic. It is a useful indicator of the disease. We studied the scrub typhus children with eschar to describe its distribution. **MATERIAL AND METHODS:** This is a retrospective study done in tertiary care hospital. Study was done with aim of studying the distribution of eschar. Patients included in study are: confirmed to have scrub typhus with a positive Scrub typhus IgM ELISA test and presence of eschar, Children less than 18 years. Data collected regarding clinical profile of cases and eschar distribution. **RESULTS:** Totally 52 cases with eschar were included in the study. Commonest site of eschar was axilla followed by groin. Other common sites of eschar included abdomen and chest. **CONCLUSION:** Detection of eschar helps clinically to distinguish scrub typhus from other febrile illness. Knowledge of common eschar sites would be useful for early clinical diagnosis of scrub typhus.

KEYWORDS: Scrub typhus, Eschar, *Orientia tsutsugamushi*, Distribution.

INTRODUCTION: Scrub typhus was first described in 1989 from Japan. Scrub typhus is caused by *Orientia tsutsugamushi*.¹ It is an intracellular bacterium. Rats and rodents are reservoirs and it is transmitted by the bite of mites. It is endemic in Korea, China, Taiwan, Japan, Pakistan, India, Thailand, Malaysia and northern parts of Australia.² In India the disease is prevalent in southern states, Jammu and Kashmir, Himachal Pradesh, Bihar and Maharashtra.

Scrub Typhus usually presents as fever, headache, myalgia, can be complicated by hepatitis, pulmonary and cardiac involvement and meningoencephalitis. Eschar is the site of inoculation, where initial multiplication occurs before the dissemination and the size varies from 5 – 20mm. An eschar is painless and non-pruritic, and hence its presence is unnoticed and not reported by patients.³ It is a useful indicator of the disease but of variable rate of occurrence.^{3,4} Hence, we studied the patients with eschar to describe its distribution over the body of Scrub typhus cases.

MATERIAL AND METHODS: This is a retrospective study done in tertiary care hospital. Study was done with aim of describing the distribution of eschar. Cases between June 2011 to May 2015 were included. Patients included in study are: confirmed to have scrub typhus with a positive Scrub typhus IgM ELISA test and presence of eschar, Children less than 18 years. Data collected regarding clinical profile of cases and eschar distribution. This study was approved by the Institute research and ethical committee and patient confidentiality was maintained using unique identifiers.

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The data was analysed using Microsoft Excel 2010 and SPSS (Version 19) software. All data on categorical variables were presented as frequencies and percentages. Chi square test was used to compare the frequencies and percentages. All the statistical analysis were carried out at 5% level of significance and p value <0.05 was considered significant.

RESULTS: During the study period a total of 52 patients were diagnosed with scrub typhus (Positive for IgM) and had an eschar. The mean (standard deviation) age of the patients was 6.4±2.7 years and there were 32 females and 20 males.

DISTRIBUTION OF ESCHAR: Totally 52 cases had an eschar. All cases had single eschar. The eschar was seen preferentially in the front of the body. The distribution of eschars over the body overall is shown in table 1 and fig1. Commonest site was axilla followed by groin. Other common sites of eschar included abdomen and chest. Some unusual sites for an eschar were the cheek and dorsum of the foot. All 52 patients received specific treatment for scrub typhus. A total of 51 patients (98.07%) recovered with treatment.

DISCUSSION: Eschar is typical feature of scrub typhus, which alone helps in the diagnosis of scrub typhus. Eschar is formed at the site of the larval bite, it measures around a 5–20mm.⁵ There is paucity of data on the distribution of the eschar in the children with scrub typhus. In our study the common eschar sites were localised on the axilla and groin followed by abdomen. The ticks move slowly on the skin or along the clothes until they reach a point where they cannot move further and tend to bite at the skin in that area.

Areas where skin folds are found and moist areas should be examined for the presence of eschar.⁶ an eschar is formed when an infected chigger bites the skin while feeding on human skin. It bites in warm, damp areas like axilla, groin.⁷ the organisms multiply at the site of inoculation and form papule, which ulcerates and becomes necrotic and forms a typical black eschar with or without regional lymphadenopathy.

The border of the eschar may be surrounded by a reddish erythema. In 3-4 weeks eschar resolves completely with no sequelae. Occasionally it may cause scarring or hyperpigmentation. Patients are unaware of eschar as it is painless but sometimes it can be pruritic.⁸ once organisms enter the body, there will be proliferation in the endothelial lining of small blood vessels which leads to vasculitis. Direct invasion of the organism and vasculitic response leads to the disease manifestations.⁹ Four days to two weeks after the bite, symptoms begin with fever and malaise followed by adenitis in the lymph glands draining the bite site.¹⁰

Scrub typhus responds immediately to treatment with defervescence occurring within 24-48 hrs. In children doxycycline and azithromycin and are equally effective.^{9,11} Delayed administration of effective antibiotics has resulted in higher morbidity and mortality.¹² Therefore knowledge of preferential sites will help in early clinical diagnosis and to differentiate it from other febrile illnesses.

Differential diagnoses include dengue fever, leptospirosis, typhoid fever, and malaria. Diagnosis is confirmed by isolation of organism in culture or serological tests like immunoglobulin M (IgM) capture enzyme-linked immunosorbent assay (ELISA) which have a retrospective value but are confirmatory. Other diagnostic modalities include indirect fluorescent antibody test, Weil-Felix test, and immunochromatographic tests.¹¹

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CONCLUSION: Detection of eschar helps clinically to distinguish scrub typhus from other febrile illness. It is most important sign which helps in making the diagnosis, therefore should be thoroughly examined for its presence especially over the covered areas like axilla and groin. Knowledge of common eschar sites would be useful for early clinical diagnosis of scrub typhus.

Site	Number (%)
Neck/Head	2 (3.84)
Axilla	15(28.84)
Arms	1(1.92)
Chest	5(9.61)
Back	3(5.76)
Abdomen	7(13.46)
Groin	14 (26.92)
Thighs	2(3.84)
Legs	3(5.76)

Table 1: Distribution of Eschar

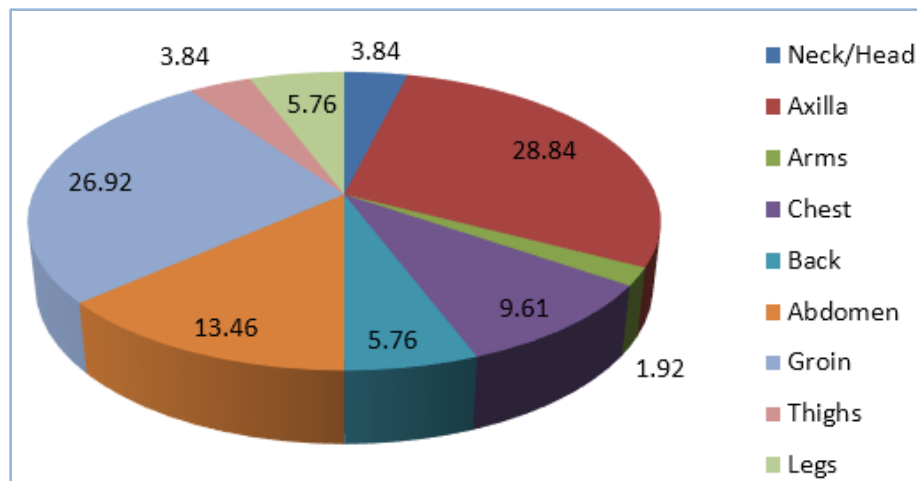


Fig. 1: Percentage of Distribution of eschar

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