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Research Article

STUDY OF COMPLICATIONS AND MORTALITY OF SCRUB TYPHUS ADMITTED TO A TERTIARY CARE ICU IN AMARAVATI

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ABSTRACT

The aim of this study was to elaborate on the complications and mortality of Scrub Typhus. **Material and methods:** Thirty patients who were admitted to a tertiary care Hospital ICU in Amaravati region from August 2017 to January 2018 were included in this prospective study. After history, through physical examination and confirmation by WeilFelix test with titre >1:160 OXK or IgM antibody by ELISA methods, patients were included into study. Other causes of acute febrile illness were excluded after necessary laboratory investigations. **Results:** In our study most patient were in age group of 31-50 years which constituted 70%. Male patients were 56.7% versus female 43.3%. Agriculture workers constituted 40%. We observed a mortality rate of 56.7% with the following complications MODS 12 (40%), ARDS 6 (20%), Myocarditis 4 (13.3%), Meningoencephalitis 4 (13.3%) and Acute renal failure 4 (13.3%). Eschar was present in 66.7 % of patients which is one of the important diagnostic clues. **Conclusion:** High index of suspicion and aggressive management with early antibiotic management with other supportive measures are important for better out comes in cases of Scrub Typhus.

INTRODUCTION

Scrub typhus is an acute febrile illness caused by OrientiaTsutsugamushi is one of the important causes of ICU admissions with variable mortality rates. Scrub typhus is transmitted by bite of larvae (chiggar) of Thrombiculid mite of genus Lepto-trombidium. Vasculitis and endothelial dysfunction are the major pathology which cause mortality[1]. Scrub typhus is a serious public health problem in Asia-pacific region and threatens 1 billion population globally and cause 1 million illness each year. It can cause severe organ failure and a case fatality rate of 70% without appropriate treatment.[2] This study was undertaken to see the complications and mortality rate of scrubtyphus cases admitted to ICU of tertiary care hospital in Amaravati capital of AndhraPradesh.

Aims and Objectives

To study the clinical features, complications and mortality rates of scrub typhus cases admitted to ICU of a tertiary care hospital in new capital of Andhra Pradesh, Amaravati which is one of the epidemic regions of scrub Typhus.

A prospective study conducted in a tertiary care hospital ICU admitted patients in Amaravati new capital of Andhra Pradesh from August 2017 to January 2018. Thirty patients of acute febrile illness with clinical features suggestive of scrub typhus admitted to ICU, confirmed by Weil Felix test OXK >1:160 titre or IgM antibodies by ELISA. All patients are of age above 18 years. Patient of scrub typhus with minor illness who were not admitted to ICU were excluded. Patients of mixed infections were excluded. All patients were negative for Malaria, Dengue, Enteric fever, Leptospirosis and Urinary tract infections by appropriate investigations. Scrub typhus confirmed by Weil Felix test OXK >1:160 and whenever possible ELISA IgM antibodies was taken positive. Through physical examination for the presence or absence of Eschar is seen. Other investigations like complete blood counts, Liver function tests, Renal parameters, Chest X-ray, urine examination, ABG, USG and CT Brain were done. All patients were managed with Doxycycline and some combined with Azithromycin. Other supportive measures like IV fluids, Paracetamol, Proton Pump inhibitors, bronchodilators were given. Whenever needed, Ventilatory support, Hemodialysis and transfusion of blood products were also given.

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RESULTS AND OBSERVATIONS

Totally, thirty patients were diagnosed to have scrub typhus in the present study. Out of 30 patients male 17 (56.7%) were more than females 13 (43.3%).

Table 1 Age Distribution of Patients in the Present Study

Age	Frequency	Percent
≤ 30	4	13.3
31-40	10	33.3
41-50	11	36.7
51-60	5	16.7
Total	30	100.0

Table 2 Occupation of Patients in the Present Study

Occupation	Frequency	Percent
Agriculture	12	40.0
Business	5	16.7
House wife	6	20.0
Labourer	3	10.0
Student	4	13.3
Total	30	100.0

Out of 30 patients, all thirty presented with fever 100 %. The other features observed were 12 (40%) cough, 18(60%) breathlessness, 12(40%) rash, 16(53.3%) diarrhoea, 13(43.3%) headache, 8(26.7) altered sensorium, 15(50%) hematuria, 17(56.7%) vomiting and 6(20%) with abnormal bleeding. All patients vital parameters like temperature, pulse, respiratory rate, B.P and oxygen saturation were recorded. Other factors that were taken into consideration were Haemoglobin, Total count, Platelets, Random blood sugar, Creatinine, SGOT, SGPT, Alkaline phosphatase, and Total Protein.

Table 3 Symptomatology of Patients in the Present Study

Symptom	Frequency	Percent
Fever	30	100
Cough	12	40
SOB	18	60
Rash	12	40
Diarrhoea	16	50.3
Headache	13	43.3
Altered sensorium	8	26.7
Hematuria	15	50
Vomiting	17	56.7
Abnormal bleeds	6	20

Complications seen were ARDS in 6(20%), meningoencephalitis in 4(13.3%), myocarditis in 4(13.3%), acute renal failure (ARF) in 4(13.3%) and MODS in 12(40%). Eschar is absent in 10(33.3%) and present in 20(66.6%) (Figure 6). Out of 30 patients, 13 are alive and 17 expired.

Table 4 Complications noted

Complications	Frequency	Percentage
ARDS	6	20
Meningo-encephalitis	4	13.3
Myocarditis	4	13.3
Acute Renal failure	4	13.3
MODS	12	40
Total	30	100

Table 5 Formation of Eschar

Eschar	Frequency	Percent
Yes	20	66.7
No	10	33.3
Total	30	100.0

Table 6 Investigation Profiles

Variable	Number	Minimum	Maximum	Mean	SD
HB	30	6	12	9.9	1.6
TC	30	2600	15000	6880	3616.7
Platelet	30	1	98	27	34.1
RBS	30	56	305	169.2	57.9
Creatinine	30	0.6	6	2.2	1.3
SGPT	30	34	3000	329.8	631.2
SGOT	30	30	3600	380.6	746.5
Alkaline phosphatase	30	112	356	191.8	70.8
Total protein	30	4	7	5.9	0.9

Table 7 Vital Parameters

Vitals	Number	Minimum	Maximum	Mean	SD
Pulse	30	56.0	130.0	95.8	17.8
Saturation Oxygen	30	76.0	100.0	93.7	6.1
Resp.rate	30	18.0	46.0	30.4	8.0
Temperature	30	98.0	104.0	100.4	1.6
Systolic BP	30	80.0	130.0	104.3	12.8
Diastolic BP	30	60.0	80.0	70.0	6.9

DISCUSSION

Scrub typhus, an important cause of acute febrile illness with many complications is one of the reasons for ICU admissions with variable mortality rates. Scrub typhus appear particularly in the Tsutsugamushi Triangle which is distributed over an area bounded by Japan in east, china, Philippines, Australia in south and west through India, Pakistan, possible to Tibet and Afghanistan, Southern part of USSR in north.[3] Rickettsiaceae are aerobic, small gram negative cocobacilli that are obligate intracellular parasites. Rickettsiaceae proliferate in endothelial lining of small arteries, capillaries and veins causing vasculitis.[4]Incubation period is one to three weeks. The clinical features are fever with chills, malaise, head ache, back ache, macular rash, lymphadenopathy, nausea, vomitings, diarrhoea, pain abdomen and acalculus cholecystitis. Eschar at the site of bite is seen in 55% of Indian studies which is one of the diagnostic feature of scrub typhus. Confirmation of Scrub typhus by serologic assays like indirect fluorescent antibody, indirect immunoperoxidase and enzyme immunoassays are useful. Scrub typhus PCR amplification of Orientia genes from Eschar and blood are effective.[5] Weil Felix testing with OXK titre >1:320 is considered as diagnostic in some studies. [6] Complications of scrub typhus are important cause of mortality are many.[7]

Respiratory: Pneumonitis, ARDS

Cardiovascular: Myocarditis, Heart failure, shock

Cerebrovascular: Encephalitis, Aseptic meningitis, Cranial nerve palsy, Cerebral infarcts or Heamorrhages.

Renal: Acute Renal Failure

Gastrointestinal: Peritonitis, acute abdomen, Granulomatous hepatitis.

Haematological: DIC, Heamophagocytic syndrome.

Multi organ dysfunction syndrome

Nrushen Peesapathi reported from north Andhra Pradesh, ARDS in 6.6 %, MODS in 8.3%, Meningoenchepalitis 3.3% and a fatality of 7 % inuntreated cases.[8]

Md Jamil from north- EasternIndia reported Hepatitis 15.25%, ARF 13.5%. Pancreatitis 1.65%, ARDS 11.86%, MODS 16.94%, Meningoencephalitis 8.43% and mortality of 8.47 %.[9]

T Ray RW reported from Japan, Pneumonitis 36%, ARDS 15 %. ARF 8 %, Myocarditis 3%, and septic shock in 3%.[10] Dong, Min KIm reported complications are Pneumonia 53 (25.%), Renal Failure 32 (15.4%), Meningoencephalitis 23 (11%), Shock 15 (7.2%), Gastrointestinal bleed 6 (6-9%), Myocarditis (2.4%) and death 1 (0.5%).[11]

In our study most patient are in age group of 31-50 years which constitute 70%. Male patients were 56.7% versus female 43.3%. Agriculture workers constitute 40%. We observed a mortality rate of 56.7% with the following complications MODS 12 (40%), ARDS 6 (20%), Myocarditis 4(13.3%), Meningoencephalitis 4(13.3%), Acute Renal Failure 4(13.3%). Eschar is present in 66.7 % of patients and not found in 33.3 %

CONCLUSION

In conclusion the results of this study shows that high index of suspicion is needed in undifferentiated acute febrile illness for diagnosis of scrub Typhus. The mortality rate is varied in different studies ranging from 0.5 to 70%. Our study showed 56.7% mortality. In contrast to other studies MODS is seen in 40% of cases followed by ARDS in 20% of cases. Eschar one of the important diagnostic clue of Scrub Typhus is found in 66.7% on careful examination. Scrub Typhus in ICU admission had a higher mortality.

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