Original Research Article

A study of clinic- laboratory profile of Rickettsial fever in children at tertiary health care center

Ramesh Babu Dasari1, Radha Lavanya Kodali[2*], S Sri Krishna[3]

[1,3]Associate Professor, Department of Pediatrics, Apollo Institute of Medical Sciences, Hyderabad, INDIA.
[2]Assistant Professor, Department of Paediatrics, Dr Pinnamaneni Siddhartha Institute of Medical Sciences and Research Centre, Chinnavutapalli, Andhra Pradesh, INDIA.
Email: drlavanyakodali@gmail.com

Abstract

Background: Rickettsial infections are distributed throughout the world and are re-emerging in the Indian subcontinent, especially among children. **Aims and Objectives:** To study clinic-laboratory profile of Rickettsial fever in children at tertiary health care center. **Methodology:** In the one year period i.e. January 2018 to January 2019. In the one year period all the suspected patients were undergone Positive Weil - Felix test. In the one year period 36 children who shown positive weilfelix test were included into study. The data was entered to excel sheet and analyzed by excel software for windows 10. **Result:** In our study we have seen The most common age group was 9-12 yrs i.e. 33.33%, followed by 6-9 yrs were 44.44%, 3-6 yrs were 19.44%, 1-3yrs were 2.78%. The majority of the patients were Male i.e. 63.89% and female were 36.11% The most common symptoms were Fever in 100.00% , followed by Pain in abdomen in 72.22%, followed by Vomiting in 58.33%, Cough in 47.22%, Headache in 36.11%, Myalgia in 33.33%, Polyarthralgia in 30.56%, Altered sensorium in 25.00%, Seizures in 19.44%, Breathlessness in 13.89%. The most common signs were Hepatosplenomegaly in 58.33, followed by Splenomegaly only in 52.78%, Eschar in 41.67%, Hepatomegaly only in 25.00%, Pallor ,Edema, Conjunctival congestion, Rash was 13.89%, Tachypnea, Lymphadenopathy was 11.11%, Hypotension was 8.33%, Meningeal signs positive in 5.56%. The most common laboratory signs were Elevated liver enzymes in 80.56%, followed by Anemia in 58.33%, Leucocytosis in 50.00%, Thrombocytopenia in 47.22%, Hyponatremia . In 41.67%, Hypoalbuminemia in 38.89%, Elevated creatinine in 13.89%, Elevated CPK in 11.11% Leucopenia in 8.33%. **Conclusion:** It can be concluded from our study that majority of the patients were in the age group of 9-12yrs, predominant in Males. The most common symptoms were Fever, Pain in abdomen, Vomiting, Cough, Headache. The most common signs were Hepatosplenomegaly, Splenomegaly, Eschar. The most common laboratory signs were Elevated liver enzymes, Anemia, Leucocytosis, Thrombocytopenia etc.

Key Word: Rickettsial fever, Weil felix test, Thrombocytopenia

[*]**Address for Correspondence:**
Dr. Radha Lavanya Kodali, Assistant Professor, Department of Paediatrics, Dr Pinnamaneni Siddhartha Institute of Medical Sciences and Research Centre, Chinnavutapalli, Andhra Pradesh, INDIA.
Email: ajay_reddy52420@yahoo.com

Received Date: 01/02/2019 Revised Date: 11/03/2019 Accepted Date: 19/04/2019
DOI: https://doi.org/10.26611/101410110

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 24 April 2019

INTRODUCTION

Rickettsial infections are distributed throughout the world and are re-emerging in the Indian subcontinent, especially among children. Rickettsial disease has been reported from various parts of India, such as Tamil Nadu, Karnataka, Kerala, Maharashtra, and some parts of northern India[1-9]. The infection has established itself as an endemic disease in Southeast Asia[10-12]. Multiple factors contribute to the gross under-diagnosis of rickettsial infections; these include the relatively non-specific disease presentation, low index of suspicion, and lack of awareness about its re-emergence[3,11-13] Being a significant health problem but neglected one so we have studied clinico- laboratory profile of Rickettsial fever in children at tertiary health care center.

How to cite this article: Ramesh Babu Dasari, Radha Lavanya Kodali, S Sri Krishna. A study of clinic- laboratory profile of Rickettsial fever in children at tertiary health care center. *MedPulse International Journal of Pediatrics.* April 2019; 10(1): 41-44.
http://medpulse.in/Pediatrics/index.php

METHODOLOGY

This was a cross-sectional study carried out in the department of the pediatrics in the one year period i.e. January 2018 to January 2019. In the one year period all the suspected patients were undergone Positive Weil - Felix test with OX titer of > 1:160 (OX K for scrub typhus, OX 19 for epidemic/endemic typhus and OX 2 for spotted fever group) and/or positive IgM scrub typhus ELISA with written and explained consent of parents were included into the study. In the one year period 36 children who shown positive weilfelix test were included into study. All details of the patients like age, sex, clinical features were taken. All of the patients underwent all routine investigations like CBC, LFT, KFT, CPK etc. The data was entered to excel sheet and analyzed by excel software for windows 10.

RESULT

Table 1: Distribution of the patients as per the age

Age (in yrs)	No.	Percentage (%)
1-3	1	2.78
3-6	7	19.44
6-9	16	44.44
9-12	12	33.33
Total	36	100.00

The most common age group was 9-12yrs i.e. 33.33%, followed by 6-9yrs were 44.44%, 3-6 yrs were 19.44%,1-3yrs were 2.78%.

Table 2: Distribution of the patients as per the sex

Sex	No.	Percentage (%)
Male	23	63.89
Female	13	36.11
Total	**36**	**100.00**

The majority of the patients were Male i.e. 63.89% and female were 36.11%

Table 3: Distribution of the patients as per the clinical features

Clinical features	No.	Percentage(%)
Symptoms		
Fever	36	100.00
Painin abdomen	26	72.22
Vomiting	21	58.33
Cough	17	47.22
Headache	13	36.11
Myalgia	12	33.33
Polyarthralgia	11	30.56
Altered sensorium	9	25.00
Seizures	7	19.44
Breathlessness	5	13.89
Signs		0.00
Hepatosplenomegaly	21	58.33
Splenomegaly only	19	52.78
Eschar	15	41.67
Hepatomegaly only	9	25.00
Pallor	5	13.89
Edema	5	13.89
Conjunctival congestion	5	13.89
Rash	5	13.89
Tachypnea	4	11.11
Lymphadenopathy	4	11.11
Hypotension	3	8.33
Meningeal signs	2	5.56

The most common symptoms were Fever in 100.00%, followed by Pain in abdomen in 72.22%, followed by Vomiting in 58.33%, Cough in 47.22%, Headache in 36.11%, Myalgia in 33.33%, Polyarthralgia in 30.56%, Altered sensorium in 25.00%, Seizures in 19.44%, Breathlessness in 13.89%. The most common signs were Hepatosplenomegaly in 58.33, followed by Splenomegaly only in 52.78%, Eschar in 41.67%, Hepatomegaly only in 25.00%, Pallor, Edema, Conjunctival congestion, Rash was 13.89%, Tachypnea, Lymphadenopathy was 11.11%, Hypotension was 8.33%, Meningeal signs positive in 5.56%.

Table 4: Distribution of the patients as per the laboratory findings

Laboratory findings	No.	Percentage (%)
Elevated liver enzymes	29	80.56
Anemia	21	58.33
Leucocytosis	18	50.00
Thrombocytopenia	17	47.22
Hyponatremia	15	41.67
Hypoalbuminemia	14	38.89
Elevated creatinine	5	13.89
Elevated CPK	4	11.11
Leucopenia	3	8.33

The most common laboratory signs were Elevated liver enzymes in 80.56%, followed by Anemia in 58.33%, Leucocytosis in 50.00%, Thrombocytopenia in 47.22%, Hyponatremia In 41.67%, Hypoalbuminemia in 38.89%, Elevated creatinine in 13.89%, Elevated CPK in 11.11 % Leucopenia in 8.33%.

DISCUSSION

The Rickettsiae are a heterogenous group of small obligatory intracellular, gram negative coccobacilli and short bacilli, most of which are transmitted by a tick, mite, flea or louse vector. Clinical infections with rickettsiae were earlier classified according to the taxonomy and diverse microbial characteristics of the agents, into six genera Rickettsia, Orientia, Ehrlichia, Anaplasma, Neorickettsia, and Coxiella[14]. Many organisms which were earlier grouped under rickettsiae have now been reclassified. The incidence of rickettsial infection had seen a significant decline in the nineties secondary to widespread use of insecticides. But the past decade has witnessed resurgence in the incidence of rickettsial infection[15,16,17]. In most clinical scenarios the presentation of rickettsial infection does not fit into a particular pattern. The clinical presentation of rickettsial

infection is wide and varied. Severity varies from subclinical illness to severe illness with multiple organ system involvement, which can be serious enough to be fatal, unless diagnosed early and treated[18]. Untreated cases have case fatality rates as high as 30-45% with multiple organ dysfunction, if not promptly diagnosed and appropriately treated. Even though the specific gold standard tests for diagnosing rickettsial infections are the immunofluorescence antibody (IFA) and the indirect immunoperoxidase (IP) test, these are expensive and not easily available in India[19] Rickettsial diseases account for significant cases of tropical febrile illnesses. Most of the cases initially present with fever and non-specific signs and symptoms such as vomiting, myalgia, headache and conjunctival congestion making the diagnosis difficult.[20,21] The common differential diagnosis for rickettsial fever includes viral hemorrhagic fever especially dengue fever. Most of children diagnosed with rickettsial fever in the present study were referred to the treating physician as dengue like illness[22]. In our study we have seen The most common age group was 9- 12 yrs i.e. 33.33%, followed by 6-9yrs were 44.44%, 3-6 yrswere 19.44%, 1-3 yrs were 2.78%. The majority of the patients were Male i.e. 63.89% and female were 36.11% The most common symptoms were Fever in 100.00% , followed by Pain in abdomen in 72.22%, followed by Vomiting in 58.33%, Cough in 47.22%, Headache in 36.11%, Myalgia in 33.33%, Polyarthralgia in 30.56%, Altered sensorium in 25.00%, Seizures in 19.44%, Breathlessness in 13.89%. The most common signs were Hepatosplenomegaly in 58.33, followed by Splenomegaly only in 52.78%, Eschar in 41.67%, Hepatomegaly only in 25.00%, Pallor ,Edema, Conjunctival congestion, Rash was 13.89%, Tachypnea, Lymphadenopathy was 11.11%, Hypotension was 8.33%, Meningeal signs positive in 5.56%. The most common laboratory signs were Elevated liver enzymes in 80.56%, followed by Anemia in 58.33%, Leucocytosis in 50.00%, Thrombocytopenia in 47.22%, Hyponatremia In 41.67%, Hypoalbuminemia in 38.89%, Elevated creatinine in 13.89%, Elevated CPK in 11.11% ,Leucopenia in 8.33%. These findings are similar to Sandeep Kumar [23]*et al* they found Of 324 children admitted with fever, 139 (42.9%) children were diagnosed to have rickettsial disease of which 15 children were excluded due to co-infections. Age ranged from 10 months to 17 years with a mean age of 7.2 ± 4.56 years. Common clinical manifestations were fever (100%), vomiting (46.8%), hepatosplenomegaly (39.5%), isolated splenomegaly (38.7%), pallor (35.5%), headache (31.5%), myalgia (30.6%), breathlessness (4.8%), edema (33.9%), abdominal pain (22.6%), conjunctival congestion (21%), cough (19.4%), skin rash (18.5%), eschar (17%), seizures (9.7%), altered sensorium (8.9%), and lymphadenopathy (8.9%). Complications seen were meningitis/meningoencephalitis (9%), pneumonia (5%), acute respiratory distress syndrome (ARDS) (4%), gangrene (2%), myocarditis (1.6%), acute kidney injury (AKI) (1.6%) and stroke (1.6%). Common laboratory features were elevated liver enzymes (60.5%), thrombocytopenia (54%), hypoalbuminemia (53.2%), anemia (47.6%), elevated CRP (46%), leucocytosis (41.9%), and hyponatremia (38.7%). There was no mortality and all recovered. Ninety four (76%) children were diagnosed with scrub typhus, 25 children were included in other typhus group and 5 children were diagnosed as spotted fever. Vomiting, hepatosplenomegaly, anemia, myalgia, skin rash were seen more common in patients with spotted or endemic typhus whereas eschar, seizures were seen only in children with scrub typhus. Elevated CRP, hypoalbuminemia and elevated liver enzymes were seen in all patients with spotted fever.

CONCLUSION

It can be concluded from our study that majority of the patients were in the age group of 9-12yrs, predominant in Males. The most common symptoms were Fever, Pain in abdomen, Vomiting, Cough, Headache. The most common signs were Hepatosplenomegaly, Splenomegaly, Eschar. The most common laboratory signs were Elevated liver enzymes, Anemia, Leucocytosis, Thrombocytopenia etc.

REFERENCES

1. Dass R, Deka NM, Duwarah SG, Barman H, Hoque R, Mili D, Barthakur D (2011) Characteristics of pediatric scrub typhus during an outbreak in the North Eastern region of India: peculiarities in clinical presentation, laboratory findings and complications. Indian J Pediatr 78: 1365-1370.
2. Mahajan SK, Rolain JM, Sankhyan N, Kaushal RK, Raoult D (2008) Pediatric scrub typhus in Indian Himalayas. Indian J Pediatr 75: 947-949.
3. Rathi N, Rathi A (2010) Rickettsial infections: Indian perspective. Indian Pediatr 47: 157-164.
4. Murali N, Pillai S, Cherian T, Raghupathy P, Padmini V, Mathai E (2001) Rickettsial infections in South India - how to spot the spotted fever. Indian Pediatr 38: 1393-1396.
5. Kulkarni A VS, Kulkarni P, Bidri LH, Padwal S (2009) Rickettsial disease: An Experience. Pediatr Infect Dis J 1: 118- 126.
6. Mittal V, Gupta N, Bhattacharya D, Kumar K, Ichhpujani RL, Singh S, Chhabra M, Rana UV (2012) Serological evidence of rickettsial infections in Delhi. Indian J Med Res 135: 538-541.
7. Kumar M, Krishnamurthy S, Delhikumar CG, Narayanan P, Biswal N, Srinivasan S (2012) Scrub typhus in children at a tertiary hospital in southern India:

clinical profile and complications. J Infect Public Health 5: 82-88.
8. Mathai E, Rolain JM, Verghese GM, Abraham OC, Mathai D, Mathai M, Raoult D (2003) Outbreak of scrub typhus in southern India during the cooler months. Ann N Y Acad Sci 990: 359-364.
9. Palanivel S, Nedunchelian K, Poovazhagi V, Raghunadan R, Ramachandran P (2012) Clinical profile of scrub typhus in children. Indian J Pediatr 79: 1459-1462.
10. Chanta C, Chanta S (2005) Clinical study of 20 children with scrub typhus at Chiang Rai Regional Hospital. J Med Assoc Thai 88: 1867-1872.
11. Huang CT, Chi H, Lee HC, Chiu NC, Huang FY (2009) Scrub typhus in children in a teaching hospital in eastern Taiwan, 2000-2005. Southeast Asian J Trop Med Public Health 40: 789-794.
12. Lijuan Z, Si H, Yuming J, Liang L, Xuemei L, Lianying L, Huilan Y, Qiang Y, Chuangfu C, Shiwen W (2011) A rapid, sensitive and reliable diagnostic test for scrub typhus in China. Indian J Med Microbiol 29: 368-371.
13. Khairallah M, Ladjimi A, Chakroun M, Messaoud R, Yahia SB, Zaouali S, Romdhane FB, Bouzouaia N (2004) Posterior segment manifestations of Rickettsia conorii infection. Ophthalmology 111: 529-534
14. Longo D, Fauci A, Kasper D, Hauser S, Jameson J, Loscalzo J. Harrison's Principles of Internal Medicine. 18th ed.: McGraw Hill Professional; 2011.
15. Mathai E, Rolain JM, Verghese GM, Abraham OC, Mathai D, Mathai M, *et al.* Outbreak of scrub Somashekar typhus in southern India during the cooler months. Ann N Y Acad Sci 2003;990:359-64. 3. 16.HR, Moses PD, Pavithran S, Mathew LG, Agarwal I, Rolain JM, *et al.* Magnitude and features of scrub typhus and spotted fever in children in India. J Trop Pediatr 2006; 52:228-9.
16. Sharma A, Mahajan S, Gupta ML, Kanga A, Sharma V. Investigation of an outbreak of scrub typhus in Himalayan region of India. Jpn J Infect Dis 2005; 58:208- 10.
17. Vivekanandan M, Mani A, Priya YS, Singh AP, Jayakumar S, Purty S. Outbreak of scrub typhus in Pondicherry. J Assoc Physicians India 2010;58:24-8.
18. Batra H. Spotted fevers and typhus fever in Tamil Nadu. Indian J Med Res. 2007; 126: 101-103.
19. Narvencar KPS, Rodrigues S, Nevrekar RP, Dias L, Dias A, Vaz M, *et al.* Scrub typhus in patients reporting with acute febrile illness at a tertiary health care institution in Goa. Indian J Med Res. 2012; 136:1020-4.
20. Dass R, Deka NM, Duwarah SG, Barman H, Hoque R, Mili D, *et al.* Characteristics of pediatric scrub typhus during an outbreak in the North Eastern Region of India: Peculiarities in clinical presentation, laboratory findings and complications. Indian J Pediatr 2011; 78:1365-70.
21. Krishna MR, Vasuki B, Nagaraju K. Scrub typhus: audit of an outbreak. Indian J Pediatr. 2015; 82:537–40.
22. Sandeep Kumar, ShrikiranAroor, Pushpa GurudasKini. Clinical and Laboratory Features of Rickettsial diseases in children in South India .)Year : January-March 2019 ; 16 (1)

Source of Support: None Declared
Conflict of Interest: None Declared