Research Article

Clinical study & laborotory profile of rickettsial fever in children- a study from rural Maharashtra

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Abstract

Introduction: Rickettsial fever has been reported to be endemic in the Himalayan belt, Maharashtra and Karnataka in India among the adult population. Pediatric data on the same is limited in developing countries. Recently, the profile of rickettsial fever has been described in children in South India with similar clinical features. **Material Methods:** This study was conducted from the patients admitted in our hospital, Ashwini Rural Medical College, Hospital & RC, Solapur, from the month of January 2014 to June 2015. **The inclusion criteria were,** clinical suspicion & supportive lab evidence – Weil Felix, positive leucocytosis, thrombocytopenia. **Results:** In our study age of presentation ranged from 6 months to 12 years, with mean age of 7 yrs, there was no statistically significant sex difference. All patients presented with fever & purpuric rash was seen in 82%, altered sensorium was seen in 58%, seizures were seen 34% & Hepatosplenomegaly was seen in 65% of cases. Other investigations: In our study CSF examination was done in 25 patients of which 10 had abnormal findings, 6 showed low sugar and 8 high protein. In our study according to the Weil Felix titers, most probable disease would be tick borne spotted fever or epidemic typhus, since no louse infestation (the scalp and body infestation, lymphadenopathy) was seen in any of the patients, and most of them were from rural areas more chances of tick infestation. **Conclusions**: The diagnosis of rickettsia should always be kept in mind for workup of exanthematous fever. High index of clinical suspicion and good laboratory co- relation are helpful in detection of more no of cases. Early diagnosis and treatment with doxy and chloramphenicol can reduce the hospital stay and cost. Associated mixed infections may mislead diagnosis and are more fatal. Weil Felix test is not diagnostic standard. It should be interpreted in good clinical context, still it is easily available to all & remains good screening test.

Key words: Rickettsial Fever, Weil Felix Test, Rash, Hepatosplenomegaly.

Introduction

Microorganisms belong to the family of rickettsiaceae and are obligate intracellular cocco-bacilli [1]. The causative organism was named after Howard Ricketts, who was the first to demonstrate the role of the tick (Dermacentor andersonii) as the vector for the disease in western Montana in the US in 1906 [2]. The illnesses caused can be divided into 3 main biogroups – Spotted fever, typhus and scrub typhus groups [3]. The most frequent presenting symptoms of the illness include fever, headache, rash, and myalgias [4]. Rickettsial fever has been reported to be endemic in the Himalayan belt, Maharashtra and Karnataka in India among the adult population [5]. Pediatric data on the same is limited in developing countries. Recently, the profile of rickettsial fever has been described in children in South India with similar clinical features [6].

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Rickettsial fever is an acute febrile zoonotic disease spread by bites of ticks and mites. Rickettsiae make up a family of gram – ve coccobaccilli and short bacilli that grow strictly in eukaryotic cells. They are obligate intracellular parasites.

Humans are accidental host. The family rickettsiae is named after Howard Taylor Ricketts who discovered spotted fever and died during his studies (1909). The family has been classified in 4 genera as Rickettsia, Coxiella, Rochemalia & Erhlichia [7], [8].

Rickettsia have varied clinical spectrum of manifestations, including the CNS, RS, and GIT. Early Clinical diagnosis with high index of suspicion can prevent morbidity & mortality.

Prevalence of this disease is worldwide and in recent times increased incidence in India. The varied clinical spectrum, lack of clinical suspicion, absence of adequate laboratory techniques, expensive tests, all these pose a great challenge in diagnosis and treatment [9], [10].

Rickettsial disease can be dangerous if missed. We have notice increased incidence in the past 10 years. Thus we conducted a study to evaluate the clinical data of patients suffering from it and admitted to our hospital.

This study aims to increase clinical suspicion,awareness about laboratory evaluations, and treatment of rickettsial infections.

Type of study: Retrospective study

Methodology: This study was conducted from the patients admitted in our hospital, Ashwini Rural Medical College, Hospital & RC, Solapur, from the month of January 2014 to June 2015.

The inclusion criteria were:

1. clinical suspicion.

2. supportive lab evidence – Weil Felix, positive leucocytosis, thrombocytopenia,

- **Clinical Suspicion** was based on history of fever, non confluent maculopapular or purpuric rash involving palms and soles, and neurological symptoms.
- **Weil Felix test** for (OX-19, 0X-2, 0X-K strains) was done on each patient of clinical suspicion. It is a slide agglutination test done according to manufacturer's instructions, from Plasmatech laboratories, Bridfort, UK. The kit tests serum dilutions from 1:20 to 1:320. Significant titre is 1:80, those with positive titre were included in our study.

On admission, data of age, sex, local residing area, exposure to animals, etc was recorded and, -complete blood count, -malarial parasite, -urine exam. was done on all patients. CSF, electrolytes, chest –X-ray, USG, dengue IgM, CT scan done as and when needed. All patients were treated with: chloramphenicol (100 mg/kg/day) in 3 divided doses.or doxycycline (5 mg/kg/day) as single dose or in some cases both drugs were given.

Results

In our study of 9 months period, 60 patients satisfied our inclusion criteria, age ranged from 6 months to 12 years, maximum incidence in 2 to 7 years age group (70%), and male to female ratio was 1.2:1.

Table No-1: Major presenting symptoms.

Sr.	Clinical features	No. of cases	Percentage
1	Fever	60	100
2	Hepatosplenomegaly	39	65
3	GI upset	15	25
4	Convulsions	20	34
5	Altered sensorium	35	58
6	Pain in legs	6	10
7	Purpuric rash	49	82
8	Upper GI bleeding	4	7
9	Pneumonia	3	5

Table No-2: Investigations.

INV	Value	No	%
Mean HB	9.3%		
Leucocytosis	> 10,000 cell/mm	40	66
Thrombocytopenia	>100,000	33	56

CBC-Mean Hb was 9.3 gm/dl; Leucocytosis (>10,000 cells/mm) in 66%, thrombocytopenia (<1 lakh) was seen in 56%. **CSF** analysis done in 25 patients of which 10 were abnormal, sugar low in 6 cases, proteins high in 8 cases, pleocytosis in all cases with mean cell count 78 cells/mm.

Table No-3: CSF analysis.

CSF feature	No	%
Sugar low	6	10
Protein high	8	13
Pleocytosis	60	100

Other lab parameters:

Coagulation studies-PT.APTT was prolonged in 5 out of 20 cases, FDP D Dimer was positive in 4 cases.

Echocardiography – was done in 10 cases exhibiting tachycardia with gallop rhythm, 5 of them showed myocardial involvement in form of reduced EF<50%.

CT/MRI- scan was done in 18 patients, of which 8 were normal, 7 had cerebral edema, and 3 with features of meningitis.

Outcome- 5 children required mechanical ventilation, out of it 3 expired and 2 recovered well. Responses to doxy, chloramphenicol was quite good and most were afebrile by 48-72 hours. Out of total 60 cases 55 (92%) recovered well, 7% expired and 3 cases went AMA.

Discussion

Rickettsial diseases are an important but often under recognized cause of febrile illness locally. Of the wide range of rickettsial diseases, typhus disease is the most commonly recognized entity in our area.

In our study age of presentation ranged from 6 months to 12 years, with mean age of 7 yrs, there was no statistically significant sex difference. This is similar to Colomba et. al [11] & Nigwekar P et. a l [12] who showed median age of 5yrs and 6 yrs respectively with no significant sex deference.

Majority of patients presented with fever (100%), purpuric rash was seen in 82%, which is similar to Colomba et. al [11] & Nigwekar P et. al [12]. Altered sensorium was seen in 58 % which is much more as compared with Mahajan et. al[13]. (24%) &. Seizures were seen 34% in comparison to Mahajan et. al[13]. (19%) & Nigwekar P et. al [12]. (36%). Hepatosplenomegaly was seen in 65 % as compared with Mahajan et. al [13]. (43%) & Nigwekar P et. al [12]. (34%).

Other investigations: In our study CSF examination was done in 25 patients of which 10 had abnormal findings, 6 showed low sugar and 8 high protein. This proves CNS involvement in rickettsial fever.

In our study according to the Weil Felix titers, most probable disease would be tick borne spotted fever or epidemic typhus, since no louse infestation (the scalp and body infestation, lymphadenopathy) was seen in any of the patients, and most of them were from rural areas more chances of tick infestation. Hence tick borne spotted fever is most likely cause but still further definitive investigations like PCR should be done to detect the different rickettsial organisms.

Weil Felix test still remains the most commonly used serological test. It may give false positive reactions with Proteus sp., Leptospirosis, Borrelia and severe liver disease. It is negative for R.pox, R. quintana, with brill-zinsser disease. Even though sensitivity and WF test is low there are several reports which suggest good co-relation of it with clinical suspicion and other tests. Immunoflourence Assay is taken as gold standard test as it is most sensitive and most specific, but it is too costly for us and even not available easily.

The patients with late presentation were in altered sensorium, with predominant neurological features. They had poor outcome as compared to those who had received doxycycline prophylactically.

Conclusions

Rickettsial fever does exist in our area and its incidence is rising. The diagnosis of rickettsia should always be kept in mind for workup of exanthematous fever. High index of clinical suspicion and good laboratory co-relation are helpful in detection of more no of cases. Early diagnosis and treatment with doxy and chloramphenicol can reduce the hospital stay and cost. Associated mixed infections may mislead diagnosis and

are more fatal. Weil Felix test is not diagnostic standard. It should be interpreted in good clinical context, still it is easily available to all & remains good screening test.Use of empirical treatment may be considered to reduce the morbidity and mortality observed with this disease.

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