Original Articles

Mycoplasma pneumoniae: An unrecognized cause of pyrexia of unknown origin

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(Key words: *Mycoplasma pneumoniae*, pyrexia of unknown origin, particle agglutination test)

Abstract

Objective To find out the incidence of *Mycoplasma pneumoniae* infection in patients with pyrexia of unknown origin.

Design Prospective study.

Setting University Paediatric Unit, Teaching Hospital, Karapitiya.

Method Patients presenting with fever of more than 7 days with no obvious reason for its occurrence (PUO) to University Paediatric Unit, Teaching Hospital, Karapitiya from January to November 2003, were included. Patients with features of lower or upper respiratory tract infections, urinary tract infections, hepatitis, meningitis, myositis and arthritis were excluded. Routine tests for continuous fever viz. full blood count, test for malaria parasites, ESR, urine full report, urine culture, blood picture, SAT, chest x-ray, Paul-Bunnel test, hepatic transaminases and blood cultures were done in all patients. Mycoplasma antibody titre was done in each patient using the particle agglutination test.

Results There were 40 patients. Age distribution was 2-12 years. 10 patients had *mycoplasma pneumoniae* infection, mycoplasma antibody titres ranging from 640-20,480.

Conclusion 10 out of 40 (25%) children with PUO were due to *mycoplasma pneumoniae* infection.

Introduction

The commonest cause of fever in childhood is viral infection and this usually resolves within a week of onset. Causes of continuous fever include viral infections, bacterial infections, parasitic infections (such as malaria and toxoplasmosis), collagen vascular diseases and malignant conditions (such as leukaemia and lymphoma).

Mycoplasma pneumoniae is a common aetiological agent in community acquired pneumonia, accounting for about 18% of cases[1]. It is also known to produce infections in extra- pulmonary sites including central nervous system, pericardium or myocardium, hepatobiliary system and genitourinary system[2,3,4,5]. Children below 4 years of age are rarely infected with this organism. According to the literature *mycoplasma pneumoniae* is not considered a cause of pyrexia of unknown origin (PUO). Since respiratory tract infections and infections in other body systems due to *mycoplasma pneumoniae* are not uncommon, it was considered that looking for *mycoplasma pneumoniae* infection would be a worthwhile exercise in patients with PUO.

Method

A prospective study was carried out in the university paediatric unit, Teaching Hospital, Karapitiya from January to November 2003 to find out the incidence of *mycoplasma pneumoniae* infection among patients with PUO. Patients presenting with fever of more than 7 days with no obvious reason for its occurrence were considered to have PUO and were included in the study. Patients with upper and lower respiratory symptoms, urinary tract symptoms, features of hepatitis, meningitis, myositis and arthritis were excluded.

Routine tests for continuous fever such as full blood count, test for malaria parasites, urine full report, urine culture, blood picture, SAT, chest x-ray, Paul-Bunnel test, hepatic transaminases and blood cultures were done in each patient. Mycoplasma antibody test was done by particle agglutination method at the Department of Microbiology, Faculty of Medicine, Karapitiya, Galle. This is a highly sensitive and

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specific test to diagnose acute mycoplasma infection. A titre of 1:80 or more establishes the diagnosis.

Written consent was obtained from the parents. Ethical approval was obtained from the Ethics committee of the Faculty of Medicine, Karapitiya, Galle.

Results

40 patients were included in the study. 24 patients were boys. Age distribution was 2-13 years. The aetiology of continuous fever is shown in Table 1. *Mycoplasma pneumoniae* infection accounted for 10 patients. In 18 patients the cause of fever was not evident with the conventional laboratory tests.

Table 1
Aetiology of continuous fever

Cause of fever	No. of patients
Mycoplasma pneumoniae infection	10
Typhoid fever	5
Infectious mononucleosis	3
Urinary tract infection	3
Juvenile chronic arthritis	1
Unknown	18

The description of patients with positive mycoplasma antibody test is given in Table 2. The male: female ratio was 1:1. None of the patients were below 4 years of age. Mycoplasma antibody titres ranged from 640-20,480.

Table 2
Patients with positive Mycoplasma antibody test

Pt. Index	Age yrs.	Sex	Clin. features	Mycopl. antibody titre
1	13	M	Fever 8 days, Headache, Mild hepato-splenomegaly	640
2	8	M	Fever 10 days	640
3	8	M	Fever 10 days, Mild splenomegaly	640
4	5	F	Fever 14 days, Headache	640
5	8	F	Fever 8 days, Headache	640
6	8	M	Fever 12 days, Mild hepato-splenomegaly	640
7	7	F	Fever 14 days, Headache	1240
8	4	F	Fever 13 days, Mild splenomegaly	5120
9	8	M	Fever 8 days	20480
10	7	F	Fever 10 days, Headache, Mild splenomegaly	640

Discussion

When fever has been present for over a week and no cause has been found, hospital admission and adequately investigating for the cause of fever is a common practice. *Mycoplasma pneumoniae* is commonly considered as a cause of respiratory tract infection. It can cause multiple body system infections including meningitis, encephalitis, pericarditis, myocarditis, hepatitis, nephritis or arthritis. *Mycoplasma pneumoniae* is not listed under the causes of PUO. In this series of patients 10 out of 40 (25%) presenting with PUO had *mycoplasma pneumoniae* infection. All of them were above 4

years of age. Headache was a common presenting feature among these patients and there were hardly any symptoms or signs except mild hapatomegaly or hepatosplenomegaly, in a few of them. *Mycoplasma pneumoniae* antibody titres were very high, ranging from 640 – 20,480. Micro-particle agglutination test has been used for the above antibody detection and this has 100% sensitivity and 90% specificity[6]. All these patients responded rapidly to macrolide antibiotics without developing complications.

Conclusions and recommendations

Twenty five percent children with PUO were due to *mycoplasma pneumoniae* infection. It is recommended that *mycoplasma pneumoniae* infection be considered as a cause of PUO in children. Since micro-particle agglutination test has very high specificity and sensitivity presence of antibody titre more than 320 in a single sample could be considered as an acute infection.

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