

Q fever in adults patients with prolonged cough

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ABSTRACT The involvement of Q fever in prolonged cough (which lasts 3 weeks or longer) was examined. Ninety-four adult patients who visited Kawasaki Hospital, Kawasaki Medical School from April 2007 to March 2011 complaining of prolonged cough whose chest radiographs showed no abnormality were selected as subjects. The diagnosis of Q fever was made using ELISA kit from PanBio. According to the results, Q fever infection was found in 1 (1.1 %) of 94 patients. Q fever may, therefore, be a cause of prolonged cough, though its frequency is low.

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Key words : **Q fever, *Coxiella burnetii*, Prolonged cough**

INTRODUCTION

The Japanese Respiratory Society guideline in management of cough¹⁾ classifies coughs into acute cough, with a duration of less than 3 weeks, prolonged cough, with a duration of 3 to 8 weeks, and chronic cough, with a duration of 8 weeks or longer. The most frequent cause of acute cough is cold syndrome by viral infection. The major three causal diseases of chronic cough are sinobronchial syndrome, cough variant asthma, and atopic cough. Prolonged cough after cold syndrome (cough after infection) is added to these as etiology of prolonged cough. The causative organisms with higher frequency for cough after infection may include *Bordetella pertussis*, *Mycoplasma pneumoniae*, and *Chlamydia pneumoniae*. In this study,

we examined whether Q fever caused by *Coxiella burnetii*, which is a major causative organism along with *M. pneumoniae*, and *C. pneumoniae* of atypical pneumonia, causes adult prolonged cough.

SUBJECTS AND METHODS

Subjects

The subjects were patients who visited Kawasaki Hospital, Kawasaki Medical School from April 2007 to March 2011 complaining of prolonged cough (duration of 3 weeks or longer) showing no abnormality on chest radiograph. There were 32 males and 62 females aged from 19 to 78 years (48.1 ± 20.4 years).

Methods

At initial consultation, serum antibody value

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of Q fever was measured by ELISA kit (PanBio, Australia). For both IgM and IgG, an index value (ID) of 11 or greater was considered positive. Paired serum was not obtained.

RESULTS (Table 1)

In 94 patients with prolonged cough, only one patient (1.1 %) (male aged 26 years, IgM, 16.56) showed an ID of IgM 11 or greater, and none showed an ID of IgG 11 or greater.

DISCUSSION

C. burnetii (causative organism of Q fever) is considered to be the causative organism for atypical pneumonia, as are *M. pneumoniae*, *C. pneumoniae*, and *Legionella pneumophila* according to the JRS guideline for the management of community-acquired pneumonia in adults²⁾. Previously, we have reported that Q fever was involved in 4 (1.4 %) of 284 community-acquired pneumonia patients³⁾, in 6 (6.7 %) of 89 patients suffering from bronchial asthma attack⁴⁾, in 2 (2.5 %) of 80 patients with chronic lower respiratory tract infection developing acute exacerbation⁵⁾, while in hospital-acquired pneumonia, involvement of Q fever was extremely rare; 0 (0 %) of 121 hospital-acquired pneumonia patients⁶⁾.

In this study, we examined whether Q fever causes prolonged cough. According to the results, one (1.1 %) of 94 patients with prolonged cough showed a high value of IgM, suggesting acute infection of Q fever.

We used ELISA kit produced by PanBio for diagnosis of Q fever. The specification of the kit indicates that index value (ID) 11 or greater should be used to judge positive for both IgM and IgG. However, comparison of this kit with the indirect fluorescent antibody technique, which is considered the international standard, revealed that this kit is more sensitive than the indirect fluorescent antibody technique, and some investigators recommend that

Table 1. Serum antibody of *Coxiella burnetii* in patients with persistent cough

IgM > 11	1 / 94 (1.1%)
IgG > 11	0 / 94 (0%)

ID 10-16 should be regarded as a low positive⁷⁾. Others, however, point out differences between foreign and domestic epidemic strains. It is advisable, therefore, to establish a diagnostic standard in Japan by verifying domestic cases which occur frequently⁸⁾. The positive case in this study had a high value of IgM, 16.56, thus was reasonably diagnosed as Q fever.

This study is limited to examination at initial consultation, and pair serum was not obtained. An evaluation of pair serum may reveal patients with increased IgG and show that the frequency of Q fever involving prolonged cough to be higher.

It is reported that cough after infection in adults occurs due to *B. pertussis* in 6-21 %^{1, 9)}, due to *M. pneumoniae* in 1-6 %^{9, 10)}, and due to *C. pneumoniae* in 4-7 %^{9, 11, 12)}. In children, the causative organism for cough after infection is reported to be *B. pertussis*, and *M. pneumoniae*^{13, 14)}.

The involvement of Q fever in cough after infection has not been reported in the past reports. This study revealed that the frequency of Q fever in cough after infection is approximately 1 %, and should, therefore, be considered a causative organism for prolonged cough, though its frequency is lower than that of *M. pneumoniae*, and *C. pneumoniae*.

We would like to examine pair serum of Q fever in patients with cough after infection and the involvement of *L. pneumophila*, which is a atypical pathogen of cough after infection, hereafter.

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