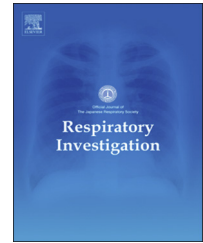


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## Rapid Communication

# Health checkup system and pulmonary nontuberculous mycobacterial disease



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## 1. Introduction

As the adequate management of pulmonary nontuberculous mycobacteriosis (NTMosis) has not been well established, it causes a substantial burden for patients and clinicians [1].

Epidemiological data provide essential information that must be clarified to identify countermeasures against this disease [2]. Recent reports from Japanese groups have estimated the incidence and prevalence of pulmonary NTMosis based on information extracted from questionnaires and death statistics.

Abbreviations: ATS, American Thoracic Society; CT, computed tomography; IDSA, Infectious Disease Society of America; NTMosis, nontuberculous mycobacteriosis; TB, tuberculosis

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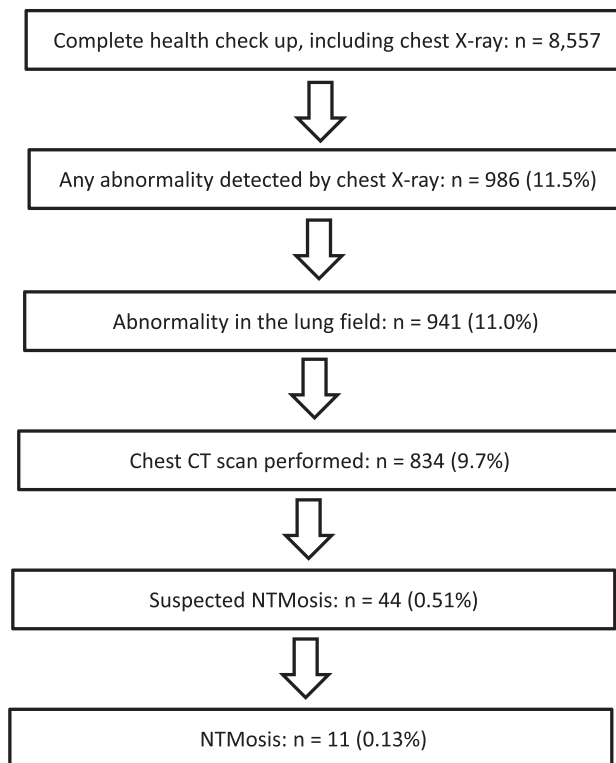
The resulting estimates (incidence of 14.7 per 100,000 in 2014; prevalence of 66 per 100,000 in 2005) were higher than those for other countries [3,4]. In Japan, an annual health checkup system that includes a chest X-ray has been implemented by law via social health insurance to detect diseases at an early stage. People who want to have a medical checkup have free access to medical health institutions. We speculate that this system has contributed to the higher prevalence of pulmonary NTMosis in this country and more accurately elucidated the burden of this disease.

## 2. Materials and methods

We retrospectively investigated health checkup data collected from April 2009 to March 2016 at JA Toride Medical Center Hospital, Ibaraki Prefecture, Japan. The abnormality detection rate on chest radiographs and the accuracy of health checkups at this institution were not statistically different from the national statistics issued by the Japan Society of Ningen Dock during the study period (3.46% in individuals 50–60 years old,  $p = 0.15$ ; 6.47% in individuals  $> 60$  years old;  $p = 0.257$ , chi-squared test). An age adjustment was performed based on the 2011 population [5]. All cases diagnosed with abnormalities in the lung field were referred to a pulmonologist for consultation. We searched all medical records of patients who consulted with the hospital's respiratory department. The diagnosis of pulmonary NTMosis was based on the criteria of the American Thoracic Society and the Infectious Disease Society of America (ATS/IDSA) [1]. This study was approved by the Ethical Committee of JA Toride Medical Center Hospital (approval date: June 13, 2014; approval no. 199); informed consent was not required.

## 3. Results

A total of 8557 people (4344 men, 4213 women) who had not been followed up for NTMosis were identified during the study period. The median ages of the population were 62.3 years (range, 21–91 years) and 59.9 years (range, 22–89 years) for the men and women, respectively. Of the 986 (11.5%) individuals with “abnormal” chest radiograph findings, 941 (11.0%) were determined to have “abnormalities in the lung field” (Fig. 1). Chest computed tomography (CT) scans were performed on 834 (9.7%) individuals who agreed to undergo the examination (Table 1). The CT results led to a suspicion of pulmonary NTMosis in 44 (0.51%) cases, and pulmonary NTMosis was diagnosed in 11 (0.13%) of these 44 cases according to ATS/IDSA criteria [1]. The 11 pulmonary NTMosis cases exhibited the following profile. All cases were symptom-free. Five cases were diagnosed by sputum culture, and six were diagnosed by bronchoscopy examination. The median patient age was 62 years (range, 29–72 years). Eight and three cases involved women and men, respectively. There were 10 cases of *Mycobacterium avium* complex (MAC) infection and one of *M. kansasii* infection. Ten cases were of the nodular-bronchiectatic type and one case was of the fibrocavitary type. One patient (pulmonary MAC disease, fibrocavitary type, located in the right upper lobe) was treated with surgery, followed by medication for 1.5 years. After several months of observation, five patients



**Fig. 1 – Results of chest radiographs at health checkups. Pulmonary NTMosis was diagnosed in 11 (0.13%) of 8,557 cases.**

**CT, computed tomography; NTMosis, nontuberculous mycobacteriosis.**

**Table 1 – Clinical diagnosis of the 834 patients who underwent CT scans at the time of this study. CT, computed tomography; NTMosis, pulmonary nontuberculous mycobacteriosis.**

	n = 834
NTMosis pulmonary disease (fulfilled diagnostic criteria)	11
Suspicion of NTMosis (including tentative diagnosis of bronchiectasis)	33
Normal findings	337
Post-inflammatory change	176
Nodular shadow	78
Pneumonia	45
Interstitial pneumonia	48
Emphysema	30
Lung cancer	20
Asbestosis	20
Metastatic lung cancer	6
Pulmonary tuberculosis	2
Others	28

with pulmonary MAC disease were treated with medication for 1–2 years because their radiological findings worsened. They then received follow-up radiological examinations without additional treatment. Four patients with pulmonary MAC disease received follow-up radiological examinations without treatment because the disease was judged to be mild.

The remaining 33 cases were suspicious for NTMosis radiologically, but it had not been diagnosed at the time of

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