Survey on the Handling of Chronic Obstructive Pulmonary Disease by Annual Health Check in Japan

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Abstract

Objective Since mild COPD can be detected in the annual health check by lung function tests, we conducted a questionnaire survey on how such examinations are used to assess chronic obstructive pulmonary disease (COPD).

Methods We mailed questionnaires to 633 facilities performing comprehensive medical check-up from June to July 2005 and obtained responses from 254 (40.1%).

Results At participating facilities, the proportion of full or part-time physicians specializing in respiratory diseases was low [40 of 366 full timers (10.9%) and 114 of 2,044 part-timers (5.6%)], with very few physicians certified by the Japanese Respiratory Society (6.8%). Non respiratory physicians were involved in evaluating the results of thoracic diagnostic imaging at 32 facilities. Lung function tests were carried out at 98.2% of facilities though relatively few facilities evaluated test results with COPD in mind. All stages (mild, moderate, severe) of COPD were diagnosed in patients at 85 facilities (39.2%), while only severe COPD was targeted by chest imaging at 97 facilities (44.7%), disregarding mild and moderate cases. Counseling for smoking cessation was provided at 113 facilities (20.6%), while 30 facilities (14.4%) provided no form of smoking cessation.

Conclusion At most facilities performing a comprehensive medical check-up, there was not a sufficient number of respirologists to ensure early diagnosis of COPD and this may have compromised COPD diagnosis. The newly proposed Japan Society of Comprehensive Medical Check-up (Ningen-dock) Standards based on the Japanese Respiratory Society may be useful to reveal early stages of COPD.

Key words: annual health check, comprehensive medical check-up, chronic obstructive pulmonary disease, diagnosis, smoking cessation

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Introduction

The number of chronic obstructive pulmonary disease (COPD) patients in Japan is estimated at 5.3 million according to the Japan COPD epidemiology (NICE) study (1). However, only about 5% of COPD patients are diagnosed and undergoing therapy, and it is possible that many COPD patients believe their shortness of breath is caused by age and are therefore undiagnosed or misdiagnosed. The more advanced the COPD, the poorer the prognosis, and in patients with the severest form of the disease with %FEV1 of <30%, the 3-year survival rate is only 60% (2). Smoking is known to be the most important etiologic factor for COPD in Japan and because COPD is most often caused by smoking, it is important to detect it early and to initiate therapy by encouraging smoking cessation.

In Japan, annual health check and comprehensive medical check-up provide opportunities for early detection and treatment of COPD. Comprehensive medical check-up is particu-
Table 1. Questionnaire

1) Is your facility dedicated only to complete medical check-up or attached to a hospital or a clinic?
2) How many people visited your facility last year?
3) Describe the smoking status in your facility?
4) How many full-time physicians are there in your facility? How many currently smoke?
5) How many part-time physicians are there in your facility? How many currently smoke?
6) How many full-time or part-time respirologists are there in your facility?
7) How many full-time or part-time respirologists are certified by the Japanese Respiratory Society in your facility?
8) What diagnostic imaging is used in your facility? Is all chest imaging based on CT or chest X-ray?
9) Who verifies diagnostic imaging? Respirologist, radiologist or other physicians?
10) Is diagnostic imaging double checked or single checked in your facility?
11) Is lung function tested as a part of a complete medical check-up in your facility?
12) What kind of lung function items are used for medical check-up?
13) When lung function testing results are abnormal, are patients proactively referred to specialists or monitored again the following year?
14) For diagnosis and patient handling, are respirologists actively involved in advising patients?
15) Is smoking cessation counseling provided proactively in your facility?

Larly useful in detecting COPD because lung function is often tested. Moreover, in recent years, thoracic CT screening is being widely performed, and there has been a movement to encourage smoking cessation by the early demonstration of pulmonary emphysema from such imaging tests (3).

Taking into account the above-mentioned circumstances, the present study was conducted to ascertain how COPD is handled by the comprehensive medical check-up in Japan, to identify problems, and to attempt to establish measures to improve the early detection of COPD.

Methods

With consent from the governing board of the Japan Society of Comprehensive Medical Check-up (Ningen-dock), a questionnaire was mailed to 633 affiliate facilities that perform the two-day comprehensive medical check-up throughout Japan. The survey was conducted over the 1-month period from June 15 to July 14, 2005. The questionnaire was conducted in Japanese however the questionnaire was translated into English and is shown in Table 1.

Results

Participating facilities

Questionnaire responses were received from 254 facilities, at a response rate of 40.1%.

Of the 254 facilities, 22 (8.7%) exclusively performed comprehensive medical check-up, while 232 (91.3%) were affiliated to a hospital or a clinic. The annual patient total of these facilities ranged from 40 to 38,670, and a total of 884,205 people visited the 254 facilities in the previous year. Smoking was completely banned at 208 facilities (82.5%), was allowed in designated areas at 43 (17.1%) and unrestricted at 1 (0.4%). Responses regarding smoking were not obtained from 2 facilities.

Physicians involved in comprehensive medical check-up

As shown in Fig. 1, 185 facilities (72.8%) had a total of 366 full-time physicians who performed comprehensive medical check-up exclusively. Of these, 40 physicians (10.9%) at 37 facilities specialized in respiratory diseases. At 85.4% of the facilities (217), no full-time physicians specialized in respiratory diseases, while 25 physicians (6.8%) at 24 facilities were certified by the Japanese Respiratory Society (JRS). At 249 facilities (98.0%), a total of 2,044 physicians worked part-time, and of these, 114 physicians (5.6%) at 61 facilities specialized in respiratory diseases, and 66 (3.2%) at 45 facilities were certified by the JRS. At 63 facilities (24.8%), no respirologist, full-time or part-time, was involved in the comprehensive medical check-up.

Some of the full-time physicians smoked at 163 facilities (64.4%), while full-time non-smoking physicians worked at 78 facilities (30.8%). Data related to smoking by full-time physicians were not available for 12 facilities. Some part-time physicians currently smoked at 124 facilities (49.2%), while none of the part-time physicians were current smokers.
at 64 facilities (25.3%). Data related to smoking by part-time physicians were not available for 64 facilities.

**Smoking history of patients**

At all facilities, the survey investigated smoking in some form. At 223 facilities (88.1%), the survey closely examined smoking, i.e., smoking history, pack years. However, at 30 facilities (11.9%), the survey only ascertained whether or not patients smoked.

**Diagnostic imaging (Fig. 2)**

Chest CT is not a diagnostic tool but a helpful tool used to diagnose COPD. Also CT was used for all chest imaging at 4 facilities (1.8%) and for some cases at 108 facilities (48.2%). At 105 facilities (46.9%), all chest imaging was based on chest X-ray. At 7 facilities, chest CT was performed only when patients requested. Diagnostic imaging was checked twice in all instances at 137 facilities (65.6%) and in some instances at 30 facilities (14.4%). At 41 facilities (19.6%), diagnostic imaging was only checked once in all instances. In one facility, diagnostic imaging was checked in a conference system. Double checks by specialists (respirologists and/or radiologists) were performed in 41 facilities. In 89 facilities, double checks were performed by one specialist and one non-specialist and in 7 facilities, double checks were performed by two non-specialists. In 25 facilities a single check was performed by non-professionals only.

Respirologists or radiologists interpreted all imaging findings at 93 facilities (39.2%) and some at 89 facilities (37.8%). At 32 facilities, interpretation was carried out by physicians other than respirologists or radiologists. Defining respirologists and radiologists as specialists in thoracic diagnostic imaging, specialists were involved in all instances at 146 facilities (69.9%), while no specialists were involved at 32 facilities (15.3%).
COPD is defined by lung function tests, which shows FEV1/FVC lower than 70%. Mild COPD shows %FEV1 higher than 80% predicted, moderate COPD between 50 and 80%, severe COPD between 30 and 50% and very severe COPD lower than 30% predicted.

Lung function

Respirologists were actively involved in advising patients at 55 facilities (24.4%). At 35 facilities (15.6%), they were involved in assessing test results, but had no part in advising patients, and at 135 facilities (60.0%), they were not involved in result assessment. In this study no definition was given between the stages of COPD. For question 12 (Table 1), severe COPD judged was according to the impression of the physician and not from lung function tests. As shown in Fig. 3, all stages of COPD were actively diagnosed at 85 facilities (39.2%), but at 97 facilities (44.7%), only severe COPD was diagnosed. At 35 facilities (16.1%), one of the targets of diagnosis was lung cancer but not COPD. Proactive smoking cessation counseling was given at 43 facilities (20.6%) and only if the physician considered it necessary at 136 facilities (65.0%). At 30 facilities (14.4%), smoking cessation counseling was not provided (Fig. 4).

Diagnosis and patient handling

Lung function

COPD is defined by lung function tests, which shows FEV1/FVC lower than 70%. Mild COPD shows %FEV1 higher than 80% predicted, moderate COPD between 50 and 80%, severe COPD between 30 and 50% and very severe COPD lower than 30% predicted.

Lung function was always tested as part of the comprehensive medical check-up at 112 facilities (48.7%), sometimes at 115 facilities (50.0%) and never at 3 facilities (1.3%). At most facilities, lung function was assessed in terms of vital capacity (VC), forced vital capacity (FVC), forced expiratory volume in one second (FEV1.0), and forced expiratory volume in 1 second as percent of FVC (FEV1/FVC). %FEV1 was the focus in none of the facilities. If lung function testing revealed abnormalities, patients were immediately referred to a specialist at 96 facilities, referred as necessary at 97 facilities or monitored again the following year at 19 facilities. However, at 2 facilities, no action was taken.

Figure 3. COPD diagnosis. At 97 (45.0%) of the facilities, patients were either diagnosed with COPD only when severe imaging findings or respiratory function tests confirmed COPD.

Figure 4. Smoking cessation counseling. At 14.4% of the facilities, smoking cessation counseling was not provided.
In Japan, annual health check and comprehensive medical check-up have played major roles in the prevention and early detection of lifestyle diseases (4). A recent study found that disease prevention is useful for reducing medical costs (5). However, while the general public is becoming more aware of the importance of COPD, most people still do not have sufficient knowledge of the disease (6). COPD is a disease that is caused by smoking, a lifestyle habit. In this context, COPD may become the fifth most frequent cause of death in Japan in 2020 and high medical costs may be incurred due to increased COPD treatment if not detected at early stages. Omori and colleagues reported that the incidence of low-intensity areas detected on CT was high among smokers and that such information was useful for motivating COPD patients to quit smoking (3). In this study, facilities affiliated with the Japanese Society of Comprehensive Medical Check-up (Ningen-dock) were selected for the questionnaire. There is another society (Japan Society of Health Evaluation and Promotion) that conducts one-day medical check-up, but no coordination was available with this society. Most facilities are joined to both aforementioned societies. There may be other facilities that have not joined both societies, in which case an unreliable medical check-up may be performed. It may be insufficient for an investigation to send questionnaires to facilities in the Japanese Society of Medical Checkups; however, this society is most earnest among all societies.

Many physicians involved in assessing the results of the comprehensive medical check-up seem to recognize the importance of COPD because of the NICE study, but the results of the present study indicate that COPD diagnosis was insufficient in terms of diagnostic imaging, lung function testing and overall assessment. It may be possible that COPD is underestimated at final judgment due to the lack of knowledge or interest in COPD. Also, the severity of COPD, as classified by %FEV1, was not considered in most facilities. Hence it appears that it would be difficult to detect COPD even if earlier judgment was done with COPD in mind.

Limitations we detected for this study were that diagnostic imaging findings were examined by non-specialists (non-respirologists or radiologists) at some facilities, and that COPD was not one of the main diagnostic targets, as more focus was given to the detection lung cancer.

Lung function tests were always performed at 48.6% of the facilities and moreover, only 96 facilities (37.9%) actively referred patients with abnormal lung function results to specialists.

At many facilities, patients were referred to specialists only when symptoms such as shortness of breath were severe, excluding patients with mild or moderate symptoms and the early detection of COPD. As a result, relying on the presence of symptoms is insufficient for detecting mild or moderate COPD and patients with early COPD might go undiagnosed if they are asymptomatic with abnormal lung function or CT findings (7).

Most problematic was the low proportion of respirologists at the included facilities and that the abilities of respirologists as COPD specialists were not being fully utilized. However, there are not enough physicians specializing in respiratory diseases or certified by the JRS to serve at all facilities performing comprehensive medical check-up.

Under these circumstances, we recognize the need to promote the early detection of COPD. One of the ways to resolve this problem is for respirologists to actively give information about COPD to non-specialists in the facilities. Recently, new management standards according to lung function abnormality were carried out in the Society of Medical Check-up (Ningen-dock) in coordination with JRS. In this management, patients with moderate COPD are recommended to consult a respirologist. But as shown in this study, not all medical facilities have respiratory function tests included in their check-up course. The Global Initiative for Chronic Obstructive Pulmonary Disease in 2006 developed a convenient questionnaire for screening COPD (8). If this questionnaire was employed in the annual health check and comprehensive medical check-up, it may help to detect COPD without the use of lung function test. Recently JRS has recommended the use of a new indicator for COPD, lung age, which is calculated from FEV1 (9). Patients can better understand lung function disorders by comparing the difference between their chronological age and “lung age”, resulting in a better understanding of COPD and encouraging smoking cessation.

In Japan, about 39.9% of adult men and about 10.0% of adult women smoke (10). Even if no abnormality is detected, a comprehensive medical check-up provides a good opportunity for individuals to quit smoking. One study found that the rate of successful cessation for those diagnosed as being healthy was lower than that for those diagnosed with some disease (11). In the present study, more than 80% of the responding facilities banned smoking in all areas, and this figure is much higher than in hospitals.

However, many physicians still smoke, and the ratio of smokers among nurses is higher than among women in general (12, 13). The results of the present study also suggest that many physicians involved in the comprehensive medical check-up smoke. Squier et al reports that the provision of smoking cessation to patients by general practitioners is influenced by the smoking status of the physicians (14). When advising people to quit smoking, it is necessary for physicians to follow their own advice. Overseas, the proportion of smokers among physicians is markedly lower when compared to the general public (13). It is necessary to encourage smoking cessation among healthcare professionals in Japan. The circumstances for smoking have changed in the past several years. In most hospitals smoking is completely banned according to the recommendations of Japan Council for Quality Health Care. As 2 years have passed since this
study, there may have been advancements made in assessing COPD and smoking cessation at facilities providing medical check-ups.

The limitation of this study was the low recovery rate of less than 50%. It seems that physicians with no interest or unaware of COPD may not have been compelled to answer this questionnaire. However this is the first study to investigate the attitudes of physicians of comprehensive medical check-up on COPD handling in Japan.

Many societies, including the JRS, require their members to abstain from smoking. In order to improve the awareness of smoking cessation and reduce COPD among the general public, it is necessary to continue promoting smoking cessation.

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Yuko Komase planned this project and prepared the basic questionnaire. Tadashi Abe, Keita Kasahara, Takeshi Kaneko, Hiroshi Takahashi, Masanori Nishikawa all contributed equally to the questionnaire and Ichiro Kuwahira supervised this project.

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