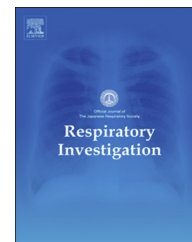




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Review

The chronic obstructive pulmonary disease comorbidity spectrum in Japan differs from that in western countries



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ABSTRACT

Patients with Chronic Obstructive Pulmonary Disease (COPD) frequently suffer from various comorbidities, such as cardiovascular disease, osteoporosis, depression, malnutrition, metabolic syndrome, diabetes, and lung cancer. These comorbidities have a significant impact on disease severity and survival. In fact, guidelines from both the Global Initiative for Chronic Obstructive Lung Disease and the Japanese Respiratory Society recommend that physicians take comorbidities into account when they evaluate COPD severity. These guidelines also emphasize the importance of managing comorbidities alongside airway obstruction in COPD. The mechanisms by which the many COPD-related comorbidities develop are still unclear. Aging and smoking are well-established as major factors. However, systemic inflammation may also contribute to the disease process. Having developed from the classical theory to differentiate COPD patients into “pink puffers” and “blue bloaters”, COPD is now generally considered as a heterogeneous condition. On this point, we have noticed that the characteristics of Japanese COPD patients tend to differ from those of Westerners. Specifically, Japanese patients tend to be older, to have lower body mass index, to suffer from emphysema-dominant lung disease, and to experience exacerbations less frequently. The comorbidity spectrum of Japanese COPD patients also seems to differ from that of Westerners. For instance, in Japanese patients, cardiovascular disease and metabolic syndrome are less prevalent, whereas osteoporosis and malnutrition are more frequent. In order to treat Japanese COPD patients optimally, we must pay particular attention to their unique demographics and comorbidity spectrum, which contrast with those of Western COPD patients.

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Contents

- | | |
|--------------------------------------|-----|
| 1. Introduction | 260 |
| 2. Cardiovascular disorder | 261 |

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3. Osteoporosis	264
4. Depression	265
5. Metabolic syndrome and diabetes	265
6. Malnutrition and skeletal muscle wasting	265
7. Lung cancer	266
8. Combined pulmonary fibrosis and emphysema (CPFE)	266
9. Asthma COPD overlap syndrome (ACOS)	267
10. Conclusion	267
Conflict of interest	267
References	267

1. Introduction

Patients with Chronic Obstructive pulmonary disease (COPD) frequently suffer from various comorbidities, such as cardiovascular disease, osteoporosis, depression, malnutrition, metabolic syndrome, diabetes, and lung cancer. In fact, guidelines from both the Global Initiative for Chronic Obstructive Lung Disease and the Japanese Respiratory Society recommend that physicians take comorbidities into account when they evaluate COPD severity. These guidelines also emphasize the importance of managing comorbidities alongside airway obstruction in COPD. Previous reports have shown that more than 60% of deaths in COPD patients are primarily caused by comorbidities rather than COPD itself [1]. The precise mechanisms by which the many COPD-related comorbidities develop are still unclear. It is well-established that aging and smoking are major factors. However, it has been suggested that systemic inflammation also contributes to the disease process. In this model, chronic inflammation in the lung, related to the COPD process, leads to systemic inflammation or systemic inflammation manifests itself as multiple organ disease.

As investigators have started to focus more on COPD-related comorbidities, many studies have been published which address the topic. In one review, Corsonello classified comorbidities into 3 groups: (1) con-causal, (2) complications of COPD, (3) co-existing (shown in Table 1) [2]. Vanfleteren performed a cluster analysis involving 12 comorbidities using data from 213 COPD patients, as shown in Table 2 [3]. This analysis, which linked certain COPD phenotypes with several comorbidities, indicated a pathophysiological mechanism of systemic inflammation in COPD. It also concurred with

previous reports which had linked low body mass index (BMI) with emphysema and osteoporosis, and high BMI with chronic bronchitis.

COPD is currently considered a heterogeneous condition, and several clinical studies have shown that the characteristics of Japanese COPD patients differ from those of Westerners. For instance, Japanese patients tend to be older, have lower BMI, suffer from emphysema-dominant lung disease [4], and experience exacerbations less frequently [5–7]. This difference is described in more detail in the section “Lessons from the Hokkaido cohort study”. By the same token, Japanese COPD patients may well differ from Westerners with respect to comorbidities. Indeed, we already know that both the prevalence and the mortality rate of cardiovascular comorbidities are lower in Japanese COPD patients. As shown in Table 3, the TORCH study revealed the causes of death in American COPD patients: respiratory failure (35%), cardiovascular disease (27%), lung cancer (14%), other cancer (7%), other causes (10%), and unknown (8%) [8]. A similar study from Japan reported the following: respiratory failure (51%), cardiovascular disease (4%), lung cancer (16%), other cancer (4%), other causes (23%) [9]. Of course, these proportions may differ with age, smoking status, disease severity, and treatment. However, differences between the Japanese and American cohorts with regard to these proportions may also reflect the different comorbidity rates and dissimilar characteristics.

In this review we discuss several previous studies, performed either in Japan or in Western countries, which focused on COPD comorbidities. We also analyze more closely the comorbidities of Japanese COPD patients. All studies discussed herein are shown in Table 3.

Table 1 – Classification of the comorbidities of COPD [2].

Con-causal	Complicating COPD	Coexisting ^a
Atherosclerotic disease: coronary, cerebral, lower limbs	Depression	Glaucoma
Chronic kidney disease	Cognitive impairment	Obstructive sleep apnea
Lung cancer	Osteoporosis	Diabetes
CHF	Sarcopenia	
Aortic aneurysm	Arrhythmias	
	Pulmonary embolism	

CHF, congestive heart failure.

^a On purely epidemiological bases.

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