A New Challenge for Diagnostic and Therapeutic Strategies for Acute Pulmonary Thromboembolism in Japan

Minoru Hongo

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Acute pulmonary thromboembolism (APTE) is a common cardiopulmonary illness with a broad clinical spectrum from an asymptomatic minor disease to life-threatening large thromboembolism (1-3). In a large study which was conducted in Europe and North America (ICOPER) (4), the overall 30-day mortality rate in patients with APTE was reported to be more than 10%. Because prompt and appropriate medical or surgical treatment can save lives, rapid and accurate assessment and risk stratification of the disease condition are essential. In the clinical setting, although correct diagnosis of APTE is generally difficult, a high suspicion of deep venous thrombosis and APTE and the presence of risk factors for venous thromboembolism, such as long-haul air travel, obesity, and oral contraceptives, pregnancy, and hormone replacement therapy in women, may increase establishment of the diagnosis (1, 3). In the diagnosis, the plasma level of D-dimer is the most useful laboratory screening test (5) and multidetector-row chest computed tomography (CT) has become the first-line imaging test (6), which has an advantage over perfusion and ventilation lung scan, especially in the detection of thrombus in pulmonary arteries (1, 3, 6). Treatment of APTE should be performed following risk stratification based on clinical evaluation, anatomical extent of the embolus, cardiac biomarkers such as troponin and brain natriuretic peptide, and assessment of right ventricular function with echocardiography (2, 3, 7, 8). In general, thrombolysis or embolectomy should be valid as primary therapy for high-risk patients and anticoagulation alone is sufficient for low-risk patients (2, 3).

Recently, Sakuma and colleagues (9) describe diagnostic and therapeutic strategy for APTE in 58 Japanese cases suspected of APTE in a prospective multicenter study. Special attention has been paid to the following 3 points in their study: 1) efficiency of the pre-test probability before using diagnostic imaging methods, 2) selection of diagnostic methods available in most Japanese hospitals, and 3) efficacy of the diagnostic and therapeutic methods by decision analysis. First, the prevalence of APTE was two-thirds of

the cases introduced to the members of the Japanese Society of Pulmonary Embolism Research before using specific diagnostic imaging methods, indicating high pre-test probability of APTE in Japan compared with western countries (9). Sakuma et al (9) found significant differences in the clinical findings, including the prevalence of prolonged immobilization, active cancer, unilateral leg swelling, and inverted T-wave in V₁₋₃ in electrocardiograms and heart rate and plasma D-dimer level, between patients with and without APTE. This may be helpful to establish a diagnosis of APTE in subjects suspected of this disease condition. Second, Sakuma et al (9) showed that most of the major Japanese hospitals could carry out the diagnostic strategy of APTE according to the method recommended by the Japanese Circulation Society, by means of arterial blood gas analysis, plasma D-dimer level, chest CT, and pulmonary angiography. The results of these tests could be obtained on the same day when the diagnosis was made in the hospitals. In contrast, Sakuma et al (9) demonstrated that compared with western countries, perfusion and ventilation lung scan would not become practical diagnostic procedures in Japan due to a number of diagnostic and methodological problems. Finally, anticoagulant was identified as the best choice with the highest expected utility with > 0.51 in pre-test probability by decision analysis (9).

Although there have been several reports on diagnostic strategies of APTE in western countries (10, 11), strategies of diagnosis and management of this disease condition are not clarified in Japan, and thus, whether or not diagnosis and management approaches for APTE in Japan are the same as those in western countries remains to be elucidated. Based on the findings by Sakuma et al (9), we have recognized the latest information on the extent of pre-test probability and diagnostic strategy of APTE in Japan. In the near future, further well-designed investigations will be necessary to establish therapeutic strategy of APTE in an objective fashion. A new challenge for diagnostic and therapeutic strategies for APTE is now starting in Japan.

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