

# Japan famous comedian with COPD was killed by SARS-CoV-2-caused pneumonia –implication for smoking risk and ECMO indication

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## Abstract

Japan famous comedian with COPD was killed by SARS-CoV-2-caused pneumonia. His death raised two impotent medical issues in Japan. Firstly, smoking and COPD is a risk for poor prognosis of COVID-19 pneumonia. Secondly, the failure of ECMO treatment for his pneumonia raised the question of proper indication of ECMO therapy for COVID-19 in aged subjects.

Japanese comedian Ken Shimura, who had been hospitalised after being infected with the new coronavirus, has died, becoming the first Japanese celebrity to die of the virus. On 19 March, Shimura was transported to a local hospital after he developed a fever and experienced difficulty breathing. He was immediately hospitalized and diagnosed with severe pneumonia, and three days later, on 23 March, a SARS-CoV-2 RT-PCR testing revealed that he had been infected with the novel coronavirus. Because his pneumonia by the virus was severe, he was intubated and mechanically ventilated. However, his oxygenation by lungs was still poor. On the next day, he was transferred to a specialized hospital, where he was equipped with a heart-lung machine: Extracorporeal membrane oxygenation (ECMO). Despite best efforts by medical staff in the specialized center hospital, he passed away on 29 March.

Shimura's death sent shock waves throughout Japan, where many people, especially the younger population, are seen as lacking a sense of urgency about the virus. His death COVID-19 pneumonia alerted that people are taking the virus more seriously.

According to reports, the comedian had previously been hospitalised for pneumonia in August 2016. At the time he was a heavy smoker who smoked three packets of cigarettes a day, but his hospitalization prompted him to quit smoking. He was supposed to suffer from chronic obstructive pulmonary disease (COPD). Because he is very energetic, nobody thinks about his death by the novel coronavirus. COPD and heavy smoking may be the key for progression of his COVID-19. Some investigators have reported that asthma and COPD are not risk factors for SARS-CoV-2 infection. Elderly age, high number of comorbidities and more prominent laboratory abnormalities were associated with severe patients [2]. The increased risk for COVID-19 pneumonia in people who smoke cigarettes or have COPD may be at least partly explained by increased levels of an enzyme that enables the virus to more easily enter their lungs [3]. Smokers and COPD patients have increased airway expression of ACE-2, which is the entry receptor for the COVID-19 virus. This may explain the increased risk of severe COVID-19 in these subpopulations and highlight importance of smoking cessation. Because Ken Shimura is one of Japan's most

celebrated comedians, Shimura's tragedy alerts many adult subjects with smokers about the smoking risk for the progression of COVID-19 in Japan. Japan respiratory society released the document of apparent smoking risk for COVID-19 pneumonia on April 20<sup>th</sup> [4].

The other important issue was also raised by his tragedy. The important issue is the clinical indication of ECMO in the COVID-19 pneumonia in Japan. ECMO is indicated for a patient with acute severe respiratory failure whose life cannot be maintained by conventional ventilator management, or whose lungs can be injured irreversibly by continuing conventional ventilator management. Actually, it is not easy to decide the indication because ECMO must consume enormous costs and needs a great deal of manpower. Basically, patients treated with ECMO must be no previous serious lung diseases. The advanced stage of COPD is a strong challenge for ECMO therapy for severe COVID-19 pneumonia and/or ARDS. In Japan, ECMO application criteria are not clearly determined. Even years of 70 or coexisting with COPD are not contraindication for ECMO treatment for ARDS. However, his death indicates that coexistence of COPD may be an indicator for poor prognosis of ECMO treatment. Although the specific age is not contraindication for ECMO treatment, the ECMO treatment risk is increased with advancing age; usual age cut off varies by institution, most use either 65 or 70[5]. Use of ECMO in patients with a combination of advanced age, multiple co-morbidities, or multiple organ failure may be rare. The Shimura's case raised the feasibility of ECMO treatment for severe COVID-19 pneumonia in Japan.

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