Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Respiratory Investigation

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Letter to the Editor

Increase in humidifier lung cases owing to coronavirus disease 2019

Dear Editor:

Humidifier lung is a rare phenotype of hypersensitivity pneumonitis (HP) caused by exposure to fungi, bacteria, or endotoxins in contaminated vapors from humidifiers [1,2]. Since March 2020, people worldwide have had to stay at home and practice social distancing during the coronavirus disease 2019 (COVID-19) pandemic [3]. In Japan, there have been four pandemic waves, and a state of emergency has been declared three times between March 2020 and April 2021. People have changed their lifestyles to spend more time at home [3], and COVID-19 prevention advertising on television and the internet has led to an increase in the sale of humidifiers in Japan (https://www.dainichi-net.co.jp/company/news/34612/). Therefore, we speculate that the number of patients with humidifier lung increased after the COVID-19 pandemic because people spent more time at home and started using humidifiers.

Between April 2011 and March 2021, 50 patients were hospitalized for HP at Fukujuji Hospital. The diagnosis of HP was based on the American Thoracic Society, Japanese Respiratory Society, and Asociación Latinoamericana del Tórax clinical practice guideline criteria [4]. Nine patients who did not meet the criteria were excluded. Of the 41 enrolled patients, 10 (24.4%) had humidifier lung, 22 (53.7%) had other phenotypes of HP, and nine (22.0%) had HP of unknown origin.

Fig. 1 shows the number of patients with HP. The mean number of patients with HP was 3.8 per year until 2020, and the total number of patients with humidifier lung was 6 per 10 years (2011–2020), with 0–2 patients per year, without an obvious trend. All patients with humidifier lung developed the disease between January and April because humidifiers are usually used in winter, which is the dry season in Japan. Between January and March 2021, four patients were diagnosed with humidifier lung, indicating an apparent increase in the number of patients with humidifier lung during the pandemic. Of the four patients, three had started using humidifiers at the end of 2020, and two had not cleaned their humidifiers since they started using them in winter. Furthermore, between January and March 2021, four outpatients were clinically suspected of having humidifier lung, and their condition improved after they stopped using humidifiers; they could not undergo bronchoscopy owing to the COVID-19 pandemic.

Generally, the characteristics of patients with humidifier lung differ from those of patients with other HP phenotypes,

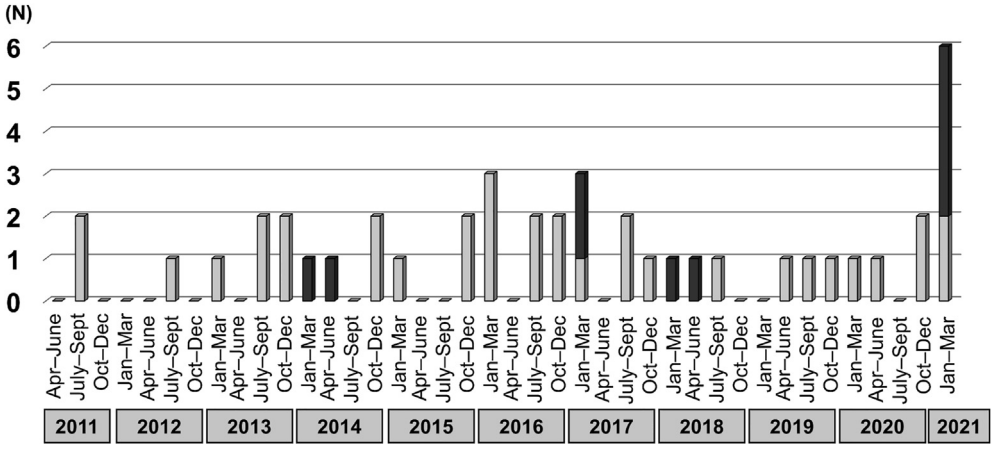

Fig. 1 – Number of patients with HP between April 2011 and March 2021. The black bar represents the number of patients with humidifier lung, and the gray bar represents the number of patients with other HP phenotypes. The mean number of patients with HP was 3.8 per year until 2020, and the total number of patients with humidifier lung was 6 per 10 years (2011–2020). Between January and March 2021, four of six patients with HP were classified as having humidifier lung.

and include lower Krebs von den Lungen-6 (KL-6) levels and fewer centrilobular ground-glass opacities and more common consolidations on computed tomography (CT) [1,2]. Typical CT findings in patients with COVID-19 are bilateral ground-glass, consolidative, or nodular opacities [5]. CT findings in patients with HP are classified as indeterminate features of COVID-19 [5]. Considering that humidifier lung is more often characterized by consolidation on CT and induces lower KL-6 levels than other HP phenotypes [1,2], humidifier lung might be difficult to differentiate from COVID-19.

Patients with humidifier lung might more likely have changed their lifestyles by staying at home and using a humidifier during the COVID-19 pandemic. Therefore, humidifier lung should be considered in the differential diagnosis of COVID-19 when CT findings are indicative of COVID-19, and it is important to educate people about the risks of humidifier lung.

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Conflict of Interest

The authors have no conflicts of interest.

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