The coronavirus disease 2019 pandemic prevents patients with pulmonary hypertension from seeking medical help

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**Introduction** Pulmonary arterial hypertension (PAH, group 1) and chronic thromboembolic pulmonary hypertension (CTEPH, group 4) are rare diseases of the pulmonary vascular system resulting in progressive heart failure and ultimately death. Poor prognosis of patients with PAH and CTEPH is reflected by progressive clinical symptoms including decreased physical capacity, exertional dyspnea, peripheral edema, ascites, cyanosis, and recurrent syncope.\(^1\)\(^-\)\(^4\) Due to the recent coronavirus disease 2019 (COVID-19) pandemic, patients with cardiopulmonary diseases have been advised against non-essential medical contacts in order to minimize the risk of infection and life-threatening complications.\(^5\) However, patients with pulmonary hypertension (PH) are characterized by high morbidity and mortality risk due to their condition itself, and they are thus expected to contact healthcare providers in case of symptom exacerbation.\(^6\)\(^-\)\(^12\)

In the present study, we aimed to analyze decisions taken by patients with PAH and CTEPH regarding the use of medical resources in response to clinical deterioration at the time of the COVID-19 pandemic and to estimate the magnitude of unjustifiable delay in seeking medical contact.

**Methods** **Study group** We interviewed patients with PAH and CTEPH treated in a single high-volume reference center for PH. Eligible patients were diagnosed with PH before March 20, 2020, the day when the COVID-19 epidemic was officially announced by the Polish government. Patients were included in the study if they were being actively treated and monitored in the PH program. Patients with mental disorders were excluded from the study.

**Interview** Phone interviews were performed by experienced PH physicians who routinely took care of the study patients. At least 2 attempts were made on 2 different days to contact every patient.

**Questionnaire** We used a questionnaire comprised of 2 question panels. In the first panel, we asked about the presence of alarming symptoms, which had appeared or exacerbated since March 20, 2020. If the response was positive, the patient was requested to report their duration. In the second panel, we asked patients who had experienced alarming symptoms about any medical contact they had (in person or by phone). Additionally, they were asked about the fear associated with medical contact caused by the COVID-19 epidemic, the time of the potential delay between symptom occurrence and first medical contact, and the impact that the COVID-19 epidemic had on the patients’ decisions. Similar questions were also asked in patients who did not report any alarming symptoms. Additionally, each patient was asked if he or she had been diagnosed with COVID-19.

**Medical assessment** After contacting each patient, based on the reported complaints, the interviewing physician was expected to assess whether an office visit or hospitalization was indicated. Additionally, the physician was asked whether postponing medical contact would have a negative impact on the patient’s prognosis.
**FIGURE 1** Impact of the coronavirus disease 2019 (COVID-19) pandemic on healthcare-seeking behaviors in patients with pulmonary arterial hypertension (PAH) and chronic thromboembolic pulmonary hypertension (CTEPH)

Abbreviations: IQR, interquartile range; M, male; F, female

**Statistical analysis** Categorical variables were presented as numbers and percentages, and continuous variables, as medians and interquartile ranges. The study protocol was reviewed and accepted by the Bioethical Committee of the Chamber of Physicians and Dentists in Kraków, Poland.

**Results and discussion** Study patients In our database, we identified 124 patients with PAH and 61 with CTEPH, all of Caucasian origin, who fulfilled the inclusion criteria. Between March 20, 2020 and April 24, 2020, we reached by phone 105 patients with PAH (men, 30 [29%])...
at a median (interquartile range) age of 59.2 (43.3–71) years, and 56 patients with CTEPH (men, 27 [48.2%]) at a median (interquartile range) age of 70.8 (61.3–77.1) years. No cases of COVID-19 were reported in this group.

**Symptoms of clinical deterioration** A group of 22 patients (13.7%) reported at least 1 symptom of clinical deterioration including exacerbation of exertional dyspnea (17 patients [77.2%]), followed by new or increased peripheral edema (9 [41%]), ascites (1 [4.5%]), cyanosis (2 [9%]), and hemoptysis (1 [4.5%]).

**Response to alarming symptoms** Only 7 patients (32%) who experienced clinical exacerbation contacted healthcare providers. In FIGURE 1, we show how the COVID-19 pandemic has influenced healthcare-seeking behavior in patients with PAH and CTEPH. About half of the study patients experienced fear of contacting the healthcare system and decided to delay or avoid medical contact because of the pandemic.

**Medical assessment** As assessed by the interviewing physicians, 10 patients (66.7%) who did not contact health service despite alarming symptoms had an indication for hospitalization or an office visit. Additionally, lack of medical contact in 5 patients was considered to negatively impact their prognosis.

**Conclusions** The COVID-19 pandemic has resulted in altered healthcare-seeking behaviors and fear of medical contact in the population of patients with PAH and CTEPH, leading to avoidance of medical contact despite signs of clinical worsening. Advised strict social distancing resulted in the absence of reported cases of COVID-19, yet at the expense of neglecting PH symptoms that may affect patients’ prognosis. Similar conclusions have come from 2 recent studies presenting a decline in the number of patients with myocardial infarction admitted to hospitals and a marked increase in the time from symptom onset to final diagnosis of pulmonary arterial hypertension in Polish patients. Kardiol Pol. 2020; 78: 750-752.

**ARTICLE INFORMATION**

**CONFLICT OF INTEREST** None declared.

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**REFERENCES**


