


Impact of SARS-CoV-2 pandemic on pulmonary hypertension out-patient clinics in Germany: a multi-centre study

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Abstract

Pulmonary hypertension is frequently underdiagnosed, and referral is delayed with subsequent impact on outcomes. During the SARS-CoV-2 pandemic, restrictions on daily life and changes in hospitals' daily routine care were introduced in Germany. This multi-centre study provides evidence for a negative influence of these restrictions on patient care in pulmonary hypertension expert referral centres.

Keywords

pulmonary hypertension, SARS-CoV-2, Covid-19

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To the Editor:

The first infection with SARS-CoV-2 in Germany was reported in January 2020.¹ The incidence of SARS-CoV-2 cases dramatically increased from the end of February 2020 reaching over 178,000 cases including 8280 deaths, so far.^{2,3} According to the high contagiousity, strict rules were constantly discussed and finally launched by the German Government. In the beginning of March, a lockdown was proposed, restricting the daily life as well as the routine care in hospitals.⁴ In pulmonary hypertension (PH), an early diagnosis is a demanding but crucial target^{5–7} and the importance of regular visits to constantly monitor treatment

in expert centres is highlighted in the current guidelines as well as the proceedings of the 6th World Symposium on PH.^{7,8} In general, patients are either scheduled for out-patient visits according to their urgency (next day, within one week, within one month) or for immediate hospital admission. Initiation and/or adjustments of PH-specific

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Table 1. Number of admissions and therapy initiations during the study period and the control periods.

	Study period 1.3.20–30.4.20	Control periods		
		Control period 3 1.1.20–29.2.20	Control period 2 1.3.20–30.4.19	Control period 1 1.3.20–30.4.18
No. of admissions	111	230	227	204
Incidence rate ratio (95% CI)		0.483 (0.385, 0.605)	0.489 (0.390, 0.614)	0.544 (0.432, 0.686)
P value		<0.001	<0.001	<0.001
No. of therapy initiations	37	68	50	62
Incidence rate ratio (95% CI)		0.544 (0.365, 0.812)	0.740 (0.484, 1.132)	0.597 (0.397, 0.897)
P value		0.003	0.165	0.013

Incidence rate ratio calculated as incidence rate study period/incidence rate respective control period; p values result from Wald Chi-square statistics.

therapies and background medications, respectively, are usually made during the above-mentioned patient visits. Independent of SARS-CoV-2-associated restrictions, fast-track referrals were offered throughout for severe cases. The impact of SARS-CoV-2 associated restrictions on PH out-patient departments in Germany, however, has not been systematically evaluated. Thus, we aimed to evaluate whether and to which extent the current pandemic impacted new patient referrals to specialised PH services in Germany.

The number of referrals of new patients in seven large PH specialised centres in Germany was analysed retrospectively. In detail, the number of patients with suspected PH referred from non-expert centres or office-based physicians as well as the number of patients in whom PH-specific treatment was subsequently started were collected. The study period, covering the lockdown, lasted from 1 March 2020 to 30 April 2020. Three control periods were respectively defined as the corresponding time in 2018 (defined as control period 1) and 2019 (defined as control period 2) as well as 1 January 2020 to 29 February 2020 (defined as control period 3) (Table 1). These numbers were compared with the Poisson regression using SPSS Statistics 26 (IBM, Armonk, USA). Moreover, p-values < 0.05 were considered statistically significant.

During the study period, 111 patients were recorded (Table 1). Noteworthy, the total number of admissions significantly decreased in the study period (incidence ratio 0.544 (0.432, 0.686), $p < 0.001$ compared to the first control period, 0.489 (0.390, 0.614), $p < 0.001$ compared to the second control period and 0.483 (0.385, 0.605), $p < 0.001$ compared to the third control period, Table 1). During the lockdown, 37 patients were initiated on a PH-targeted therapy (Table 1). Again, the total number decreased in the study period (incidence ratio 0.597 (0.397, 0.897), $p = 0.013$ compared to the first control period, 0.740 (0.484, 1.132), $p = 0.165$ compared to the second control period and 0.544 (0.365, 0.812), $p = 0.003$ compared to the third control period, Table 1) while the ratio of patients in whom PH-targeted therapy was initiated to the

total number of new admissions did not differ significantly between the periods (study period: 33%, control period 1: 30%, control period 2: 22%, control period 3: 30%; Chi-square $p = 0.325$, $p = 0.301$, $p = 0.364$, respectively).

This study provides evidence for the significant impact of SARS-CoV-2 and the related restrictions on the medical care of patients with (suspected and subsequently confirmed) PH in Germany. The total number of new appointments and absolute numbers of subsequently initiated PH-specific therapy decreased by almost 50%, compared to corresponding time periods in previous years. Of note, the relative fraction of patients with subsequently initiated PH-specific therapy remained constant during the SARS-CoV-2 pandemic. PH patients are already facing a substantial delay from onset of symptom to definite diagnosis and treatment initiation in PH centres.^{5,6} As diagnostic delays might influence the overall outcome in PH,⁵ reducing this gap has been defined as a major goal during the last PH world symposium.⁸ Therefore, the SARS-CoV-2 pandemic and its related impact on social behaviour worsened the hitherto described diagnostic delay and increased the referral gap in PH. These results are in line with the impact of hospital admission of patients with acute coronary syndrome but contrary to the impact of SARS-CoV-2 on patients' adherence on continuous positive airway pressure (CPAP) therapy at home.^{9,10} In essence, while SARS-CoV-2-associated restrictions implemented in Germany might have prevented from an uncontrolled spread of the virus in the general population, and was well received by the majority of the society as well as by health care professionals, social distancing and potential other concerns which reduce the number of patient referrals to PH specialised centres might have a negative impact on the best care for the fragile PH patients.

Conflict of interest

The author(s) declare that there is no conflict of interest.


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Supplemental material

Supplemental material for this article is available online.

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