

The impact of the Coronavirus Disease 2019 Pandemic among Adult Congenital Heart Disease Patients in Switzerland

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Introduction: Patients with acquired cardiovascular disease are considered to be at risk in case of coronavirus disease 2019 (COVID-19). However, outcomes among adults with congenital heart disease (ACHD) have not yet been studied.

Methods: We collected all reported COVID-19 cases among ACHD patients followed at the university hospitals of Basel, Bern, Geneva, Lausanne and Zurich between March 27, 2020 and January 25, 2021. Patient characteristics related to demographics, heart defect complexity, medical history, cardiac defect-related problems, date of diagnosis, clinical course of the disease and outcome were recorded. COVID-19 cases were stratified according to the date of diagnosis into the first vs. second COVID-19 wave (cut-off date October 21, 2020). The composite endpoint was COVID-19-related hospitalization or death.

Results: From 144 reported cases, 139 with known date of COVID-19 diagnosis (48 corresponding to first wave and 91 to the second) were included in the analysis. Nineteen patients reached the composite endpoint. Between waves, there were no statistically significant differences related to gender, age, body mass index, heart defect complexity and defect-related residuae. The proportion of patients with ≥ 2 comorbidities and those being hospitalized for or dying of COVID-19 was also similar among both groups. A detailed comparison of the above-reported characteristics is depicted in *table 1*. Multivariable adjusted odds ratios (95% confidence interval) for the combined endpoint were 1.1 (1.03-1.1), $p= 0.01$ for age; 13 (2.4-70.6), $p= 0.003$ for cyanotic heart disease and 4.1 (1.2-15.4), $p= 0.04$ for having ≥ 2 comorbidities. Having had COVID-19 in the first vs. the second wave had no predictive value for the combined endpoint.

Conclusion: Patient of both waves did not significantly differ regarding demographics, heart defect complexity, comorbidities, defect-related problems and outcomes. Independent risk factors for COVID-19-related hospitalization or death were increasing age, cyanotic heart disease and having ≥ 2 comorbidities.

Key words: COVID-19, adult congenital heart disease, outcome

Table

<i>n = 139 patients</i>	First wave (n= 48)	Second wave (n=91)	p
<i>Female gender (%)</i>	20 (42)	50 (55)	0.1
<i>Age (years)</i>	31 (23-42)	34 (28-44)	0.2
<i>BMI >25 kg/m²</i>	18 (38)	39 (43)	0.5
<i>≥ 2 comorbidities</i>	4 (8)	14 (15)	0.2
<i>Cardiac defect complexity (severe)</i>	9 (19)	29 (32)	0.1
<i>Defect-related problems (yes)*</i>	27 (56)	51 (56)	0.98
Hospitalizations	6 (13)	13 (15)	0.7
Deaths	1 (2)	2 (2)	0.9

Data are median (interquartile range) or number (percentage). BMI= body mass index (in kg/m²); ES= Eisenmenger syndrome; TGA= transposition of great arteries; TOF= tetralogy of Fallot

* Main problem among valvular, arrhythmia, pulmonary hypertension or heart failure