

## Adults with congenital heart disease and COVID-19

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**Background:** Adults with congenital heart disease (ACHD) are considered at increased risk for complications due to COVID-19, especially in those with cyanosis or heart failure. However, data regarding the rate of infection as well as regarding a myocardial involvement of a COVID-19 infection in ACHD patients are currently lacking.

**Purpose:** To study the rate of COVID-19 infections in ACHD patients from a tertiary centre as well as the rate of myocardial involvement of a COVID-19 infection.

**Methods:** All consecutive ACHD patients (over the age of 18 years) who attended the outpatient clinic of a tertiary centre from January 2021 to June 2021 were eligible to participate. Demographic data, as well as medical/surgical data including a history of a COVID-19 infection were collected. All patients had an antibody test for COVID-19. Patients with a positive antibody test were offered cardiovascular magnetic resonance imaging (CMR).

**Results:** Altogether, 420 patients (44.8% female, mean age  $36.4 \pm 11.6$  years) were included in the study. Congenital heart defect (CHD) complexity according to the Bethesda classification was simple in 96 (22.9%), moderate in 186 (44.3%), complex in 117 (27.9%), and miscellaneous in

21 (5.0%) patients. A positive antibody test for COVID-19 was present in 28 (6.7%) patients (CHD complexity: simple n=5, moderate n=14, severe n=7, miscellaneous n=2). Out of these 28 patients, 14 had no symptoms at all. Those with symptoms had mainly mild symptoms and were all managed in the outpatient setting. While 11 patients (39.3%) were not at all aware of their infection, 17 already knew that they had COVID-19. There was no significant difference between ACHD patients with a positive test vs those with a negative test regarding age, gender, New York Heart Association class, or complexity of CHD. Out of the 28 patients with a positive antibody test, 14 agreed to a CMR. A myocardial involvement, i.e. signs of active or healed myocarditis, was not present in any of these.

**Conclusions:** In this single-centre study, 6.7% of ACHD patients attending the outpatient clinic had positive antibodies for COVID-19. Out of these, 50% were asymptomatic and 39.3% were not aware of their infection. A myocardial involvement was not found in any of the patients that underwent a CMR. These results indicate a large number of undetected cases of COVID-19 in the ACHD population and offer reassurance that in the vast majority of cases the infection has a mild course.