SARS-CoV2 infection: functional and morphological cardiopulmonary changes in elite handball players

S. Fikenzer, A. Kogel, P. Hepp, D. Lavall, S.T. Stoebe, U. Rudolph, U. Laufs, A. Hagendorff

University hospital Leipzig AöR, Leipzig, Germany
Funding Acknowledgement: Type of funding sources: None.

Background: There is increasing evidence of cardiac involvement in SARS-COV-2 infections. This may not only apply to symptomatic infections but may also affect asymptomatic athletes. This study aimed to characterize the possible acute cardiac involvement of SARS-COV-2 infection in athletes both morphologically and functionally.

Methods and results: Eight elite handball players (27±3.5 y) with past SARS-COV-2 infection were retrospectively analyzed and compared with four uninfected team-mates (22±2.6 y). Athletes were examined 19±7 d after positive PCR-test. Echocardiographic assessment of the global longitudinal strain under resting conditions was not significantly changed after SARS-CoV2 infection (–17.7% vs. –18.1%) but magnetic resonance imaging showed minor signs of acute inflammation/edema in all patients (T2-mapping: +4.1ms) without reaching the Lake-Louis criteria. Spiroergometric analysis showed a significant reduction in VO2max (–292 ml/min, –7.0%), oxygen-pulse (–2.4 ml/beat, –10.4%), and respiratory minute volume (VE) (–18.9 l/min, –13.8%) in athletes with a history of SARS-CoV2 infection ($p<0.05$, respectively). The parameters were unchanged in the control group.

Conclusion: SARS-CoV2 infection caused functional impairment of cardiopulmonary performance primarily under stress in elite athletes.

It seems reasonable to screen athletes after SARS-CoV2 infection at least with spiroergometry to mark performance limitations and to ensure an optimal return to competition.