Epidemiology, Prognosis, Outcome

Prevalence of cardiac magnetic resonance myocarditis after SARS-CoV-2 infection

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Background: Myocarditis and myocardial inflammation constitute an important complication after viral infection. The frequency of myocardial involvement in seasonal influenza virus varies from 0 to 10%.

The prevalence of myocardial injury among patients with the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is still unclear.

The purpose of this study is to estimate the prevalence of myocarditis among unselected patients that recovered recently from SARS-CoV-2 by cardiac magnetic resonance.

Methods: We evaluated 153 consequent cardiac magnetic resonance findings that were performed from 1st of June 2020 until 15th of February 2021. Out of them, 35 patients (23%) underwent cardiac magnetic resonance due to persistent symptoms from SARS-CoV -2 infection. A conventional CMR protocol to rule out myocarditis was performed. Lake Louise Criteria were used for diagnosis of myocarditis. All scans were performed by Phillips Medical Systems Ingenia 1.5T. T1 native values were estimated elevated when mapping values measured above 1000ms, T2 mapping values were estimated elevated when greater than 55 ms. Mid wall or subepicardial late gadolinium enhancement were detected.

Results: Seven out of 35 patients (20%) fulfilled the Lake Louise criteria for myocarditis. The most prevalent symptoms were effort intolerance and palpitations (51% and 43% respectively). Mean age was 42 ± 14 years, 68% were males. T1 mapping values were increased in 31% of the patients. All patients with increased native T1, had symptoms of COVID for not more than 3 months from the symptom onset. Three out of seven patients had acute myocarditis (42%). Only 25% of this group of patients needed hospitalization due to COVID infection. All 7 patients with cardiac magnetic resonance signs for myocarditis also had X-Ray and/or multi-slice computer tomography signs for atypical pneumonia. None of these patients had signs of fulminant myocarditis.

Conclusion: The prevalence of myocardial involvement after SARS-CoV-2 infection is higher than influenza virus. Myocardial inflammation in any form presents in the first three months after the first symptoms. Myocarditis after SARS-CoV-2infection develops regardless of the severity of the symptoms.