404 Acute coronary syndromes after healing from COVID-19: report of the initial observation

Michele Golino1, Claudio Licciardello1, Federica Matteo1, Fulvio Lorenzo Francesco Giovenzana1, Cinzia Franzosi1, Federico Bisgi1, Paola Genoni1, Francesca Seganei1, Cristina Cadonati1, Matteo Morello1, Valentina Chiarchia1, Caterina Faccio1, Alberto Limido1, Jacopo Marazzato1, Fabio Angelii1, and Roberto De Ponti1,2

1Department of Heart and Vessels, University of Insubria, Varese, Italy, 2Department of Medicine and Surgery, University of Insubria, Varese, Italy, and 3Department of Medicine and Cardiopulmonary Rehabilitation, Maugeri Care and Research Institutes, Tradate, Varese, Italy

Aims: Severe pulmonary complications are well described in the coronavirus disease 2019 (COVID-19) and cardiovascular diseases (CVDs) have been documented as well. Most patients (pts) recover quickly; nevertheless, the potential long-term cardiovascular sequelae of COVID-19 remain currently unknown. The aim was to report cases of acute coronary syndromes (ACS) after healing from COVID-19 and their features at coronary angiography; secondary purpose was to hypothesize the underlying mechanisms.

Methods and results: A retrospective study was performed by acquiring data from the electronic medical record. From January to June 2021, four hypertensive pts (64 ± 17 years old; three males) with no history of CVDs and previous symptomatic SARS-CoV-2 infection (mean interval from first positive molecular swab 47 ± 32 days; all recovered after 15 days with double negative swab) were admitted to the emergency department for ST-elevation myocardial infarction (3 anterior and one inferior). At admission, the SARS-CoV-2 molecular swab tested negative, left ventricle ejection fraction was 42 ± 12%, troponin T and Nt-proBNP values were 47 ± 24 ng/l and 1180 ± 978 ng/l, respectively. Emergency coronary angiography showed single-vessel acute thrombotic occlusion (in three cases of the anterior descending artery and in one case of the right coronary artery), with no evidence of atherosclerotic disease. Because of the high thrombotic burden, in all cases a mechanical thrombus aspiration system was used, tirofiban infusion started and no balloon angioplasty or drug-eluting stent implantation was necessary (Figures A-D). After 72 h, a second SARS-CoV-2 molecular swab tested also negative. In the following days, the pts gradually recovered and they were discharged home.

Conclusions: These cases deserve specific considerations both on the pathophysiologic mechanisms of the ACS possibly related to SARS-CoV-2 and on the subsequent long-term sequelae. Among various pathophysiologic mechanisms proposed, the high affinity of the spike protein for the angiotensin converting enzyme two receptor (expressed by both cardiac and endothelial cells) could explain direct cardiac viral infection and vasculitis with possible development of thrombosis. The latter could contribute both to acute and long-term cardiac sequelae, even months after the acute infection, configuring a sort of “cardiac post-Covid syndrome”. Whether and
how long this status persists, making COVID-19 a risk factor for subsequent CVDs, is still an unresolved question. In this regard, continuous monitoring of these pts and larger future studies will be essential.