3rd International Conference on
Virology, Infectious Diseases and COVID-19
October 24-25, 2022/ Holiday Inn Express Dubai - Safa Park, an IHG Hotel

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post-mortem histopathological findings in severe COVID-19

In the history of medicine, autopsies and tissue sampling have played a fundamental role to understand the pathogenesis of emerging infectious diseases, including coronavirus disease 2019 (COVID-19); compared to the past, histopathology can be now expanded with innovative techniques and modern technologies. By minimally invasive autopsies as per guidelines of the Center for Disease Control and Prevention (CDC) of Atlanta (Georgia, USA), my research group has been able to identify the main histopathological alterations in a cohort of patients died from severe COVID-19. They can be summarized in: pulmonary (oedema, interstitial pneumonia, fungal superinfection, diffuse alveolar damage, scarring fibrosis), vascular (endotheliitis, vasculitis, thrombosis, disseminated intravascular coagulation), cardiac (myocarditis, pericarditis, infarction), hemolymphatic (spleen white pulp depletion, immunodepression, herpetic reactivations, naked megakaryocyte nuclei increase, hemophagocytosis, leukoerythroblastic reaction), hepatic (fulminant hepatitis, microvesicular steatosis), pancreatic (autoimmune pancreatitis), renal (acute tubular damage), and neuronal (stroke, olfactory epithelium shedding, demyelination). All these findings have significantly contributed to elucidate the various pathogenetic mechanisms of COVID-19 and have allowed the scientific community to adopt more targeted therapies in the interest of hundreds of thousands of patients around the world.

Keywords: coronavirus disease 2019 (COVID-19); severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2); histopathology; diffuse alveolar damage; immunothrombosis; vasculitis.

http://doi.org/10.51219/URForum.2022.Luca-Roncati ISBN: 978-1-8382915-5-6