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Constrictive Pericarditis Associated with COVID-19 or Vaccination

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Pericarditis and myocarditis have been increasingly associated with coronavirus disease-2019 (COVID-19) infection or vaccination, although the occurrence of the voluminous pericardial effusion or constrictive pericarditis (CP) is exceedingly rare.[1-7] Up to 49% of CPs result from idiopathic or viral pericarditis; up to 37% are postsurgical; up to 31% are postradiotherapy; up to 7% are due to connective tissue disorders; and up to 6% from tuberculosis.[7] The inner non-compliant layer restricts the maximal volume of the heart and can impede the diastolic function; the treatment is typically symptomatic, except in severe effusive cases that require pericardium removal.[1-7] The recent case study published by Kaya and Yalta[4] has drawn our attention to the association between COVID-19 infection or vaccination, and manifestations of relatively severe pericardial involvement. The 33-year-old, previously healthy male patient presented with cardiac manifestations five months after receiving the third dose of the mRNA-BioNTech vaccine and four months following the COVID-19 diagnosis.[4] Cardiological examination involving imaging modalities such as echocardiography, magnetic resonance imaging, and cardiac catheterization established the diagnosis of CP related either to COVID-19 infection or vaccination.[4] The patient urgently underwent planned pericardiectomy, and the postoperative course was uneventful. Therefore, the following brief remarks regarding additional literature data aim to underscore their contributions.

A 45-year-old woman who developed post-COVID-19 pericarditis with mild effusion that rapidly advanced to massive pericardial tamponade over 24 hours. She was managed using pericardiocentesis via a pigtail catheter, through which 430 ml of serous fluid was evacuated; however, thereafter a pericardial decompression syndrome (PDS) occurred.[1] She was diagnosed with right heart failure with cardiogenic shock and underwent immediate intensive care support, which included milrinone, norepinephrine, vasopressin, steroids, and antibiotic therapy.[1] The authors emphasized the significance of the early quantification of pericardial fluid, identifying signs of cardiac tamponade, and performing pericardiocentesis gradually using a drain to prevent hazards. Additionally, the association between the recent COVID-19 infection and ECP followed by a severe PDS was highlighted.[1] In October 2020, a 37-year-old man presented with CP three years after a confirmed diagnosis of COVID-19; subsequently, pericardiectomy was performed.[2] During this period, the patient experienced right-sided hemorrhagic pleural effusion and exudative pericardial effusion. Furthermore, the imaging findings and hemodynamic parameters were consistent with those of CP.[2] The authors stressed the importance of meticulous follow-up in all suspected or confirmed cases of acute pericarditis to prevent the development and/or promptly manage, any potential long-term adverse outcomes.[2] One week following the second dose of the BNT162b2 vaccine, a 28-year-old man presented with symptoms indicative of acute pericarditis. Four weeks later, he underwent pericardiectomy for CP. The postoperative course was uneventful, and he was discharged asymptomatically to his residence on Day 5.[3] The authors emphasized the importance of total pericardiectomy in treating COVID-19 vaccine-associated CP.[3] Between 2000 and 2022, pericardial disease-related mortality rates in Brazil significantly increased in the 70-79 and 80 years and above age groups. This increase in mortality was attributed to the pandemic; women experienced a higher mortality during this period; however, men experienced a higher mortality due to pericardial diseases.[5] After experiencing two COVID-19 infections that resulted in myopericarditis and a mild pericardial effusion over a five-month period, a 53-year-old female who was previously healthy experienced temporary relief from acute chest pain. However, after eight months of anti-inflammatory treatment, CP and perimyocarditis persisted.[6] Notably, for the first time, concomitant positive fluorescent antinuclear antibody and antimitochondrial Ab M2w were detected, which could represent systemic lupus erythematosus with cardiac changes. Rheumatologic factors were tested positive approximately six months after her second COVID-19 manifestation.[6] A literature review published in 2023 included ten case reports describing effusive CP diagnosed between four days and seven months after COVID-19 infection or receiving the mRNA vaccination, without predilection for any particular age

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group.[7] The authors emphasized the role of multimodal imaging assessments in obtaining an adequate diagnostic differentiation between cases of CP and those of restrictive cardiomyopathy (RCM). This is essential because CP has more effective management options, whereas RCM has limited therapies besides a poorer prognosis.[7]

In conclusion, multimodal imaging study is essential for establishing the diagnosis of CP, which in turn improves the prognosis by facilitating the early implementation of effective management under specialized care. Furthermore, in patients with CP, previous history regarding COVID-19 infection or vaccination should be documented.

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