

A rare case of severe constrictive pericarditis post-COVID requiring pericardiectomy

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Cardiovascular sequelae of COVID-19 are well documented but poorly understood. A rare but devastating sequela is that of constrictive pericarditis. To our knowledge, this is the first case described in Australasia.

History

A previously healthy 70-year-old male presented 3 weeks post-COVID with acute pericarditis with pericardial effusion and treated as acute pericarditis. Ten months later he developed severe oedema with anasarca. He was managed in another centre as undifferentiated heart failure, but following failure to respond to diuretic therapy was transferred to our centre. On arrival he had a markedly elevated jugular venous pressure, and severe oedema. The brain natriuretic peptide (BNP) was only marginally abnormal at 69pmol/L (normal <29, indeterminate 30–80pmol/L). The echocardiogram suggested pericardial constriction with septal bounce, E wave greater than A wave on transmitral Doppler flow (E/A ratio 1.8), medial mitral annulus tissue Doppler E' greater than lateral E' (annulus reversus) and dilation of the inferior vena cava without respiratory collapse. The computerised tomographic scan showed marked pericardial thickening (Figure 1). We diagnosed him as having severe constrictive pericarditis.

Our patient proceeded for pericardiectomy after not responding to medical therapy. Initial central venous pressure was greater than 20cmH₂O. He was found to have a markedly thickened anterior pericardium of 8mm adhered to the right ventricle from outflow tract to the atrioventricular groove (Figure 2). He underwent an anterior visceral pericardial fibrosis peel. Following this there was an immediate improvement in heart expansion and the central venous pressure dropped to under 10cmH₂O. Histology showed dense fibrous thickening with a small amount of admixed fibrin, consistent with organising

haemorrhagic effusion.

Post-operatively our patient had markedly improved haemodynamics and was discharged 7 days post-operatively. He was maintained on furosemide 40mg and spironolactone 25mg daily.

Discussion

We believe that our patient developed constrictive pericarditis due to COVID-19, given early evidence of pericarditis after acute infection and no other cause being identified.

To our knowledge, only five other cases of constrictive pericarditis secondary to acute COVID-19 infection have been reported.^{1–5} Only one other case reported describes similar irreversible constrictive pericarditis requiring pericardiectomy.

This case was initially diagnosed as congestive heart failure. Due to the rarity of constrictive pericarditis post-COVID, the features of constrictive pericarditis were overlooked. However, the markedly elevated venous pressure coupled with an indeterminate BNP, combined with features of pericardial constriction on echocardiogram (septal bounce, a high E/A ratio and annulus reversus) in a patient with heart failure should raise suspicion of constrictive pericarditis. Respiratory variation (greater than 25% with inspiration) of transmitral Doppler E velocity is another feature of constrictive pericarditis but was not specifically looked for on the initial echocardiogram, emphasising the importance of sonographers and echocardiologists recognising the possibility of constrictive pericarditis. Annulus reversus likely represents the tethering of the lateral mitral annulus to thickened adjacent pericardium, causing increased motion of the medial annulus relative to the lateral annulus.⁶ Interestingly, a repeat echo performed a few days post-operatively showed resolution of the annulus reversus. This appears to only occur in 50% of patients.⁷ This can be explained by the removal of constraints of lateral annular expansion, thus reducing the increased

longitudinal movement of the medial annulus.

Conclusion

We describe a rare case of constrictive pericarditis post-acute COVID-19 infection with

eventual pericardiectomy. This is an important case to highlight the complexities of the cardiovascular sequelae of COVID-19. It also highlights the importance of considering pericardial constriction as a mode of heart failure in patients recovered from COVID-19.

Figure 1: CT scan showing thickened anterior pericardium approximately 5.5mm in thickness.

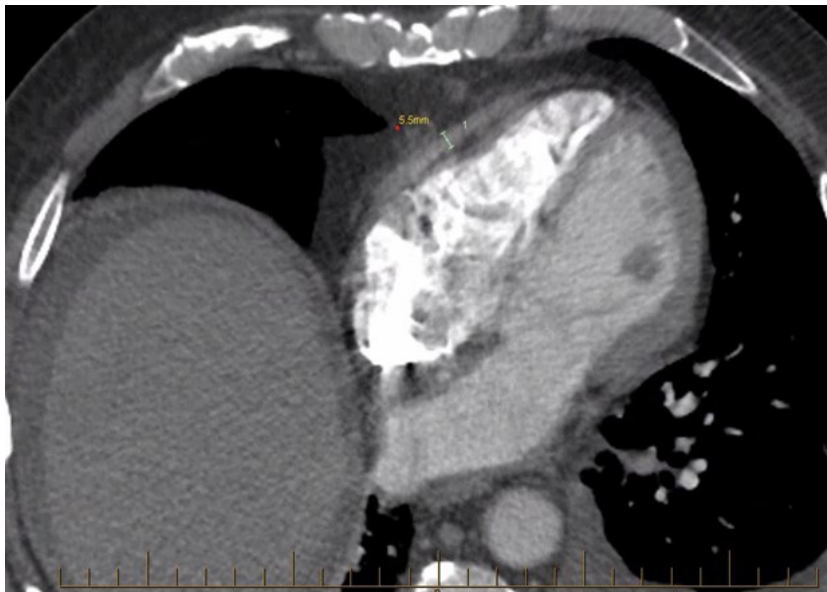


Figure 2: Intra-operative images. Enhanced to increase visualisation of stiffened anterior pericardium (dotted line). Arrow showing resected pericardium.



COMPETING INTERESTS

Nil.

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