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One-stage surgical management of complicated mitral valve vegetation and large tibioperoneal mycotic aneurysm as a complication of COVID 19 infection

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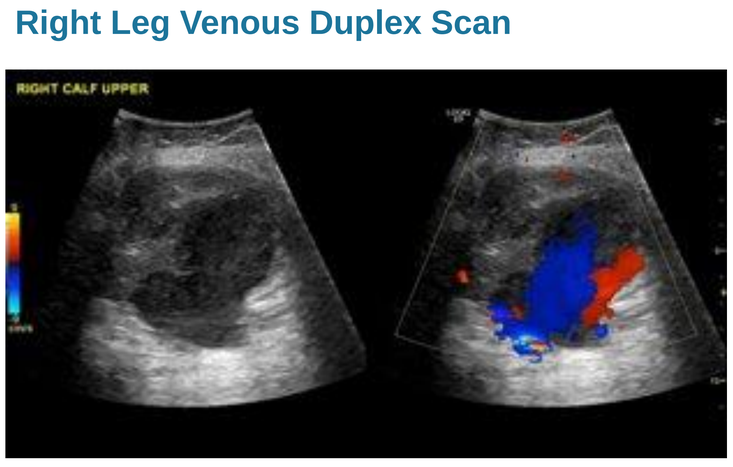
INTRODUCTION

COVID-19 (Corona virus) is a disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-COV-2). Although COVID-19 primarily affects the respiratory system, several cardiovascular complications, have been described[1]. There is mounting evidence that endothelial injury is probably caused by either direct virus-induced wall damage or secondary to injury from inflammatory response from a complex array of cytokine recruitment, activation of prothrombin factors, coagulation cascades and complement mediated microvascular thrombosis [2].

AIM

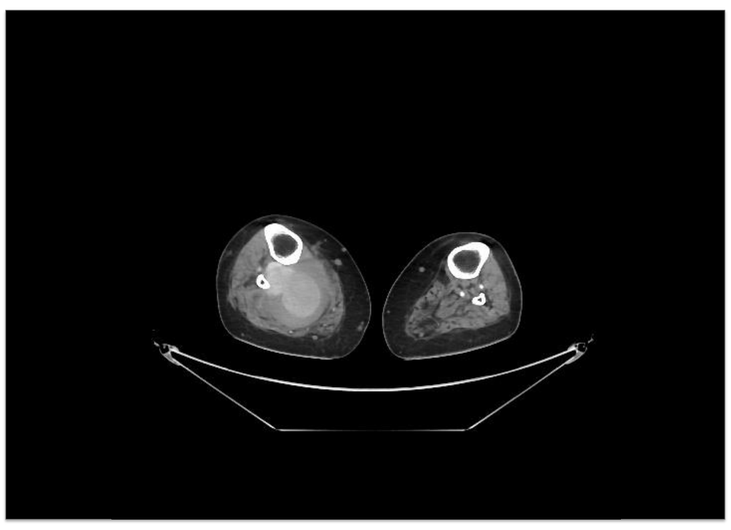
Early reports had highlighted the unusual thromboembolic complications in patients with COVID 19 infection, but more recent reports have documented other cardiovascular complications such as coronary aneurysms and bacterial endocarditis. We describe a case of a COVID-19 positive patient who presented with a large mitral bacterial vegetation and mycotic aneurysm of the tibioperoneal trunk, both of which were treated surgically.

Right Leg Venous Duplex Scan



Ruled out DVT but confirmed a large right leg vascular mass suspicious of an aneurysm.

CT Peripheral Angiogram

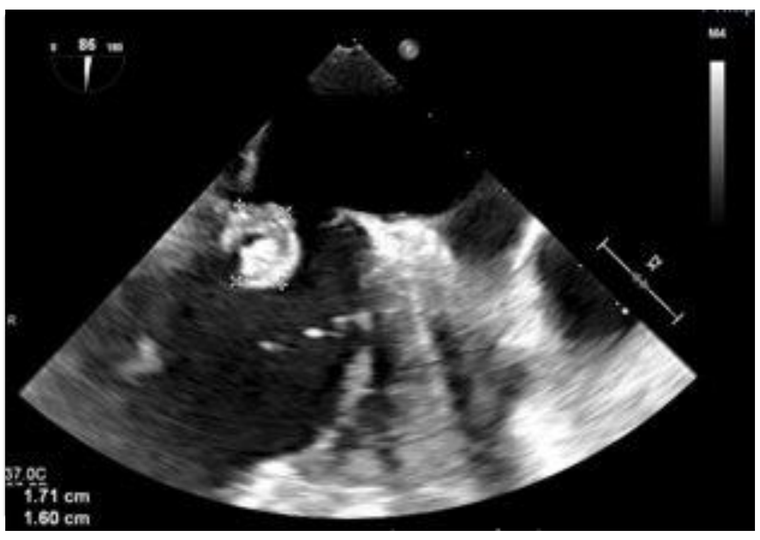


Demonstrated a large 7cm pseudoaneurysm of the distal right popliteal artery/tibioperoneal truck.

METHODS

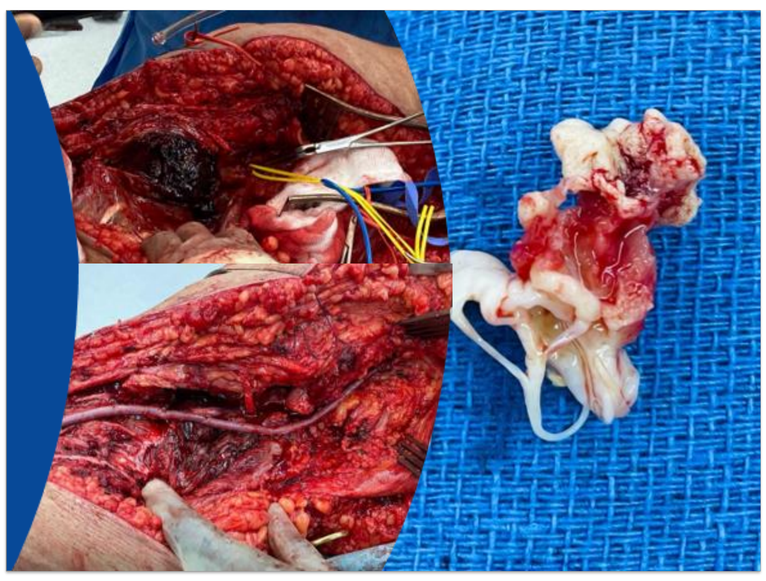
A 56-year-old male patient was referred for surgery for a large mitral vegetation that did not respond to 12 weeks of antibiotic therapy. He had COVID-19 pneumonia and had spent 6 weeks ventilated in the intensive care unit. His co-morbidities included diabetes, hypertension, dyslipidemia, and ischemic heart disease. On admission, he described increasing painful swelling in his right calf of 4 weeks duration. Clinically he was afebrile and hemodynamically stable. Abdominal examination was normal. He had palpable normal peripheral pulses in his left leg. He had palpable right femoral and popliteal pulses but nothing else palpable distally. There was a pulsatile right upper calf swelling. Laboratory values reveal Hb 7.6 g/dL, WCC 13 10^3/uL, CRP 341 mg/L, ESR 91 mm/hr, and a positive blood culture for Coagulase Negative Staphylococcus Aureus (CoNS).

Transthoracic Echocariogram



Revealed further growth of the vegetation to 1.7cm by 1.6cm. It was attached to the posterior mitral leaflet (PML)

Mitral Valve replacement



The mitral valve was replaced with Bioprosthesis Edwards Magna 29. The aneurysm was resected and a reversed vein bypass graft performed.

RESULTS

Blood culture was positive for staphylococcus aureus. Echocardiogram showed a 1.7cm X 1.8cm mitral valve vegetation. Lower limb venous Duplex scan ruled out DVT. CT peripheral angiogram showed a 7cm X 7.5cm pseudoaneurysm of the tibioperoneal truck. Both lesions were unresponsive to 12 weeks of intravenous antibiotics. He underwent combined mitral valve replacement and repair of the tibioperoneal trunk aneurysm. 4-months postoperatively, patient is symptom free with good patency of the graft on Duplex imaging and good function of the mitral valve prosthesis on echocardiogram.

CONCLUSIONS

Endothelial wall damage following cytokine storm has been well documented in severe COVID 19 infections3. In addition, the use of immunosuppressive drugs, sepsis from chest infection, and prolong ICU admission may all contribute to further endocardial wall damage. Thrombotic arterial complications have been widely described early in the COVID 19 pandemic as a manifestation of arterial wall degradation, but association with infective endocarditis, peripheral aneurysm formation and rupture remains unclear. In our patient we speculate that, the tibioperoneal truck aneurysm, is the result of septic embolism from the mitral valve vegetation rather than from the direct effects of the virus infection on the arterial wall. However, more studies and reports are necessary before we can confidently understand the association between severe COVID-19 and cardiovascular complications. Nevertheless, our case illustrates that the COVID-19 pandemic will continue to present new challenges and although open surgery was possible in our patient, there is an urgent need to identify the role of endovascular management in poor surgical candidates with complex vascular complications.

BIBLIOGRAPHY

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