A case report of cardiac cysticercosis in a returning traveller: a rare cause of myocarditis

Simon Littlewood

Department of Cardiology, William Harvey Hospital, Ashford, Kent TN24 0LZ, UK

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Background
A 38-year-old male of Indian origin presented via ambulance directly to the cardiac catheter lab with chest pain and electrocardiogram changes suggestive of an ST-elevation myocardial infarction. Serum troponin was recorded at >10,000 ng/L.

Case summary
Angiogram revealed normal coronary arteries. Echocardiography showed myocardial lesions and a subsequent cardiac magnetic resonance imaging showed myocardial cysticercosis.

Discussion
This is a case of myocardial cysticercosis causing myocarditis. He was treated successfully with albendazole for Taenia solium infection and non-steroidal anti-inflammatory drugs and colchicine for myocarditis.

Keywords
Case report • Myocarditis • Cysticercosis • Echocardiography • MRI • Imaging • Taenia solium

ESC Curriculum
2.3 Cardiac magnetic resonance • 2.1 Imaging modalities

Learning points
• Myocardial cysticercosis is rare but has to be taken into consideration in patients who have travelled to countries where Taenia solium is prevalent.
• Optimal imaging is with cardiac magnetic resonance imaging.
• Management is with antihelmintics and anti-inflammatory medications.

Introduction
A 38-year-old male presented with sudden-onset chest pain that woke him from sleep. He had no associated nausea or breathlessness but had been feeling non-specifically unwell. A 12-lead electrocardiogram showed sinus rhythm with subtle ST-segment elevation inferiorly. He underwent an emergency angiography that revealed unobstructed smooth coronary arteries.
Case summary

He had been unwell with fevers for 3 days prior to admission. Systems review revealed no headaches or weakness, no bladder or bowel symptoms, no recent weight loss, or night sweats. He had no significant past medical history, was a non-smoker, consumed around 10–20 units of alcohol a week, and reported no illicit drug use. He was of Indian descent and worked as a marketing director for a clothing company which required frequent travel abroad. On examination, he was afebrile and haemodynamically stable with normal heart sounds. His chest was clear and neurological examination was unremarkable. His abdomen was soft and non-tender with a palpable spleen 2 cm below the left costal margin.

He remained in sinus rhythm, with no detected arrhythmias whilst an inpatient and blood tests were unremarkable apart from a troponin I of 3000 ng/L which peaked at 17 000 ng/L (normal range 0–40 ng/L) on Day 2. An echocardiogram showed preserved left ventricular (LV) systolic function with no valvular abnormalities. Cardiac magnetic resonance imaging (MRI) showed a high signal on the T2-weighted short tau inversion recovery (STIR) sequence and late gadolinium enhancement in the subepicardial basal inferior and lateral walls indicating extensive myocardial oedema consistent with acute myocarditis (Figures 1 and 2) with preserved LV systolic function.

Admitted with chest pain and ST elevation on ECG

Emergency angiography showed normal coronary arteries

Cardiac MRI showed acute myocarditis with non-enhancing cysts in the myocardium, lungs and soft tissue

Treated with albendazole for parasitic infection in combination with diclofenac and colchicine for myocarditis

Diagnosis of systemic cysticercosis with myocardial involvement leading to acute myocarditis

CT head revealed presence of cerebral cysts

Patient was well and 4 months and follow up cardiac MRI showed complete resolution of myocarditis and cysts.

Figure 1 Short-axis T2-weighted STIR sequence demonstrates high signal along the basal inferior and lateral walls in keeping with extensive myocardial oedema (block white arrow).
function. There were also non-enhancing cysts seen within the myocardium, skeletal muscle, subcutaneous tissue, and lung parenchyma (Figures 3 and 4) consistent with systemic cysticercosis infection. A computed tomography scan of the head showed vesicles within the cerebellum, temporal lobe, and frontal lobe (Figure 5) consistent with neurocysticercosis. The patient had no evidence of cysticerci in the eyes. Stool analysis was negative for cysts, and therefore, the diagnosis was made on imaging alone. Serum autoantibody and viral screen as part of myocarditis work up were negative. Management was with albendazole 400 mg twice daily for 3 days for parasitic...
infection in combination with diclofenac 75 mg twice daily for 7 days and colchicine 0.5 mg twice daily for 3 months for myocarditis. The patient’s fevers and chest pain resolved. He was well on follow-up at 4 months and a repeat cardiac MRI showed resolution of myocardial oedema and cyst on T2-weighted imaging and residual late gadolinium enhancement in the subendocardial inferior and lateral walls consistent with myocardial fibrosis.

Discussion

Cysticercosis is a parasitic infection caused by larval cysts of the pork tapeworm *Taenia solium* after ingestion of uncooked pork, contaminated food, or by contact with an infected person. It is most common in developing countries in Africa, Asia, and Latin America. The cysts may go undetected by the host immune system for many years. However, as cysticerci age, their cystic structures can degenerate and rupture, leading to inflammation followed by encasement in a granuloma, most commonly in the brain. Although myocardial cysticercosis has been reported before, this is the first report of it leading to acute and active inflammation seen within the myocardium, likely a response to degeneration of myocardial cysts.

Supplementary material

*Supplementary material* is available at *European Heart Journal – Case Reports* online.

**Slide sets:** A fully edited slide set detailing this case and suitable for local presentation is available online as *Supplementary data.*

**Consent:** The author confirms that written consent for submission and publication of this case series including images and associated text has been obtained from the patients in line with COPE guidance.

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References

1. Symeonidou I, Arsenopoulos K, Tsilves D, Soba B, Gabriel S, Papadopoulos E. Human taeniasis/cysticercosis: a potentially emerging parasitic disease in Europe. *Ann Gastroenterol* 2018;31:406–412.
2. Ito A, Yanagida T, Nakao M. Recent advances and perspectives in molecular epidemiology of *Taenia solium* cysticercosis. *Infect Genet Evol* 2016;40:357–367.
3. Franco-Paredes C, Rouphael N, Méndez J, Folch E, Rodríguez-Morales AJ, Santos JL, Hurst JW. Cardiac manifestations of parasitic infections part 3: pericardial and miscellaneous cardiopulmonary manifestations. *Clin Cardiol* 2007;30:277–280.

Lead author biography

I am a Specialist Registrar Trainee in Cardiology in the UK. My areas of interest include acute cardiovascular care, cardiac imaging, and intervention.