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# Case Report: Uncommon Presentation of Cardiac Cysticercosis and its Management

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## Abstract

Cardiac involvement in disseminated cysticercosis is an uncommon occurrence. We present a case of a 32-year-old male who initially presented with diffused headache and seizure disorder and was subsequently diagnosed with disseminated cysticercosis affecting the central nervous system, cardiac tissue, intraocular structures, and skeletal muscles. We report an unusual case of disseminated cysticercosis with extensive cardiac involvement treated with medical therapy.

**Keywords:** Cardiovascular infection, disseminated cysticercosis, Taenia solium

## Introduction

Cysticercosis is an acquired parasitic infection caused by the larvae of the pork tapeworm *Taenia solium*, predominantly found in tropical regions like South America, Africa, India, and Southeast Asia. The infection occurs when a person ingests the tapeworm's eggs, which then pass through the gastrointestinal tract into the bloodstream, migrating to various organs where they form cysts (Qavi et al., 2016).

In disseminated cysticercosis, a severe and widespread form of cysticercosis, cysts can be found in the muscle, skin, eyes, heart, liver, and central nervous system, among other organs. This form of the disease can cause a wide range of symptoms depending on their location, including seizures, muscle pain, skin nodules, vision problems, heart ailments, and other neurological symptoms. Neurocysticercosis is the most severe

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complication. Cardiac cysticercosis is rare but significant (Néri et al., 2021). Cysts may cause inflammation in myocardial tissue, leading to complications such as myocarditis, arrhythmias, conduction abnormalities and even myocardial infarction.

Here, we report a case of disseminated cysticercosis involving most of the body organs with extensive involvement of heart muscle and cyst regression after the treatment.

**Case Presentation**

A 32-year-old male presented with generalized tonic-clonic seizures (3 episodes) and diffuse headache for 4 years. He had not taken any medication for seizure attacks. He did not have any other medical condition in the past. He was a known alcoholic with consumption of pork and beef. On physical examination, he was alert and appeared normal with stable vitals. He was found to have multiple cystic swellings in bilateral arms. He had cystic swelling in the right lower palpebral conjunctiva.

He underwent several investigations to rule out the possibility of disseminated cysticercosis. Ultrasonography of bilateral orbits showed the presence of multiple oval cysts. Brain MRI showed numerous cystic lesions in the cerebellar hemisphere (Figure 1). HRCT chest revealed various cysts in bilateral lung fields and thoracic musculature (Figure 2). Ultrasonography of bilateral upper limbs also showed several cysts (Figure 3).

Extensive involvement of the heart was evident by transthoracic echocardiography, which revealed severe concentric thickening of the left ventricle with multiple cysts with scolex in the ventricle wall (Figure 4) and papillary muscles (Figure 5). These cysts were seen protruding into the cavity and left ventricular outflow tract (LVOT), causing moderate obstruction of blood flow (velocity max-3.0 m/s) (Figure 6). His electrocardiogram revealed normal sinus rhythm and left ventricular hypertrophy with a strain pattern.

Under local anesthesia, the cyst was excised from the right eye and examined histologically which showed cysticercus with scolex and hooklets (Figure 7).

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The patient was managed with physician's individualized therapeutic decision including dexamethasone (0.1 mg/kg body weight), albendazole (400 mg) once daily, levetiracetam (500 mg) twice a day for 2 weeks. After that, the steroidal dose was tapered and albendazole was stopped. The patient was followed up in the outdoor patient department for up to 6 months. The patient did not complain of headaches and seizures did not occur. Echocardiography at 2 months showed no evidence of cysts, however, mild thickening of left ventricle was observed (Figure 8). A repeat echocardiography at 6 months showed normal left ventricle (Figure 9).

## Discussion

Cysticercosis is an infection caused by the larval stage of the pork tapeworm, T. solium. Humans serve as the definitive host, harboring the adult tapeworm, while both human and pigs act as intermediate hosts, hosting the larvae (Mamere et al., 2004). Infection occurs via ingestion of T. solium eggs through contaminated food or water, or via autoinfection. Risk factors include contaminated fruits, vegetables and undercooked pork. Transmission can also occur through contact with infected individuals or fecal material (Jain et al., 2010).

The clinical manifestations of cysticercosis vary and are determined by the affected organ systems. Intracerebral cysticerci frequently present with seizures, while intraocular cysticerci can lead to reduced visual acuity or blindness. Cardiac cysticercosis is rare, however, autopsy studies have shown that this condition has a prevalence of 20-27% concomitant with neurocysticercosis (Franco-Paredes et al., 2007). Cardiac cysticercosis may result in myocarditis with transient left ventricular dysfunction, dilated cardiomyopathy, cardiogenic shock, pericardial effusion, restrictive cardiomyopathy, ischemic heart disease, valve pathologies, and arrhythmias (García-Martínez et al., 2023).

Radiologically, these lesions are characterized by cystic formations with a central nodule, representing the scolex of the parasite. On MRI, these lesions appear hyperintense with well-defined margins and a hypointense nodule, which correspond to the dead parasite's scolex, a hallmark of the diagnosis (Del Brutto et al., 2001; Spina et al., 2013).

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In this case, the patient was presented with disseminated cysticercosis involving the nervous system, heart, eyes, and skeletal muscles. To the best of our knowledge, cardiac involvement has been rarely reported in the literature. Notably, despite extensive myocardial involvement along with obstruction of LVOT, this patient remained asymptomatic with no cardiac-related complaints.

There are no specific treatment recommendations in the literature for cardiac cysticercosis. Asymptomatic myocardial involvement generally warrants observation only, given the benign prognosis associated with this condition (Jain et al., 2010). Cestocides such as praziquantel and albendazole are accepted as antiparasitic agents used in the treatment of neurocysticercosis (Spina et al., 2013) and have been used in symptomatic cardiac cysticercosis (Kalra et al., 2019). The advantage of albendazole over praziquantel is that the former also destroys subarachnoid and ventricular cysts because of its better penetration in CSF. Unlike praziquantel, albendazole can be administered jointly with corticosteroid agents for anti-inflammatory therapy (White et al., 2018). Corticosteroids are often used in conjunction with antiparasitic agents in the initial treatment of neurocysticercosis to lessen the peri-cystic inflammatory reaction that follows larval necrosis (Nash et al., 2011), and it appears reasonable to employ the same strategy in patients with cardiac involvement. Thus, we opted to treat this patient with albendazole along with dexamethasone and antiepileptic drug for 2 weeks. After which, the steroid was tapered and albendazole was discontinued. Following treatment, the patient's symptoms of headache and seizures resolved, and follow-up echocardiography at 2 and 6 months showed complete resolution of cysts and absence of LVOT obstruction. No complications related to cysticidal drugs were observed with this regimen.

As per the observation, we advocate cardiac monitoring during the initial stages of treatment. Finally, surgical intervention may be indicated when the valvular apparatus is involved.

## Conclusion

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Cardiac cysticercosis is a rare condition, typically manifesting as an intramyocardial lesion. Diagnosis of cardiac involvement requires a high degree of suspicion, and imaging techniques like transthoracic echocardiography or cardiac MRI are crucial in evaluating patients, especially those presenting with neurocysticercosis. While treatment approaches remain debated, a brief regimen of cysticidal drugs and steroids might be administered to target cyst infestation in affected organs.

**Figure 1: Brain MRI showing numerous cystic lesions in the cerebellar hemisphere**

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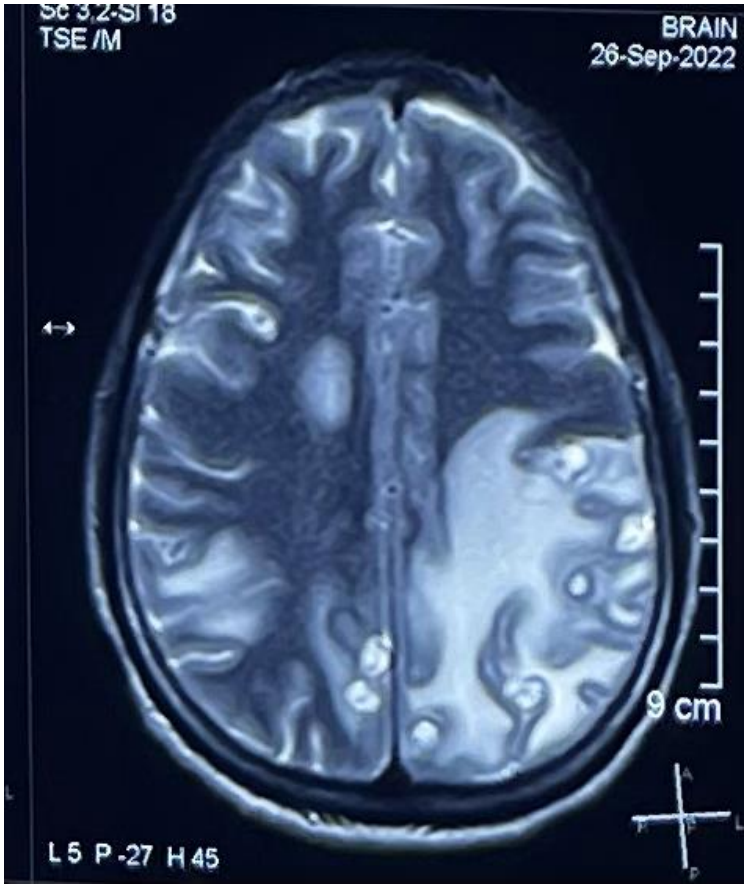


**Figure 2: HRCT chest showing cysts in bilateral lung fields and thoracic musculature**

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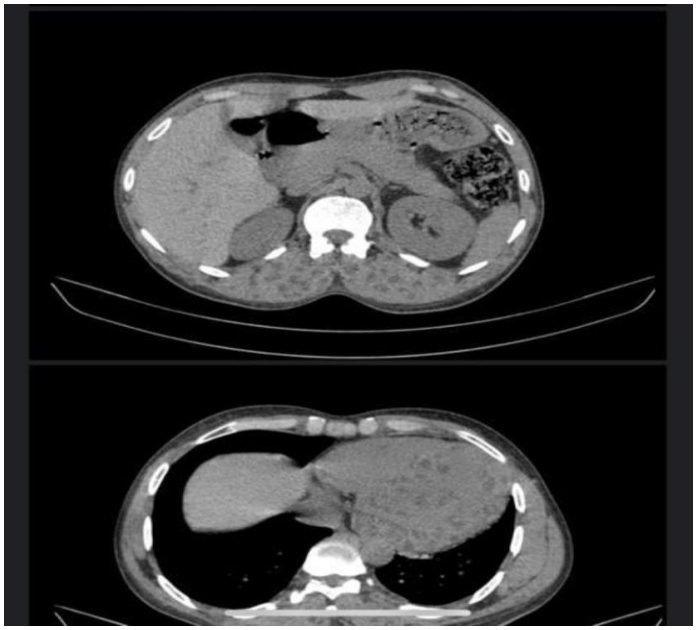

**Figure 3: Ultrasonography of upper limb showing cysts**

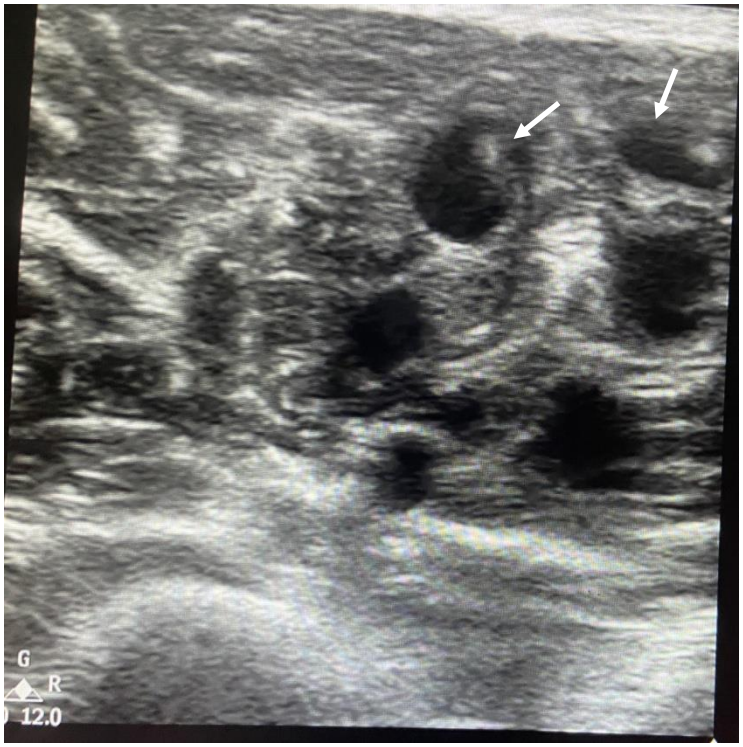

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**Figure 4: Apical 4 chamber view on echocardiography showing extensively distributed cysts with scolex in hypertrophied left ventricular myocardium protruding into cavity**

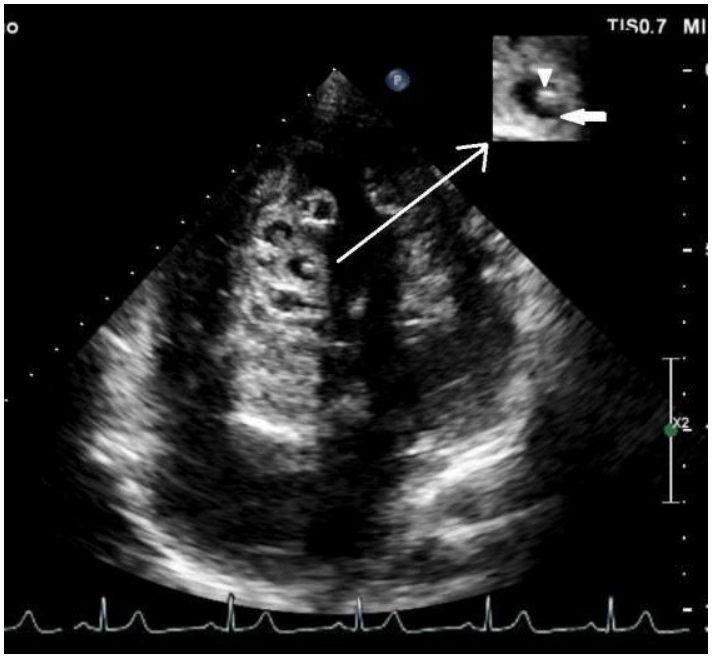

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**Figure 5: Short axis view on echocardiography of left ventricle showing severe hypertrophy with multiple cysts with scolex (arrowheads) in myocardium and papillary muscles**

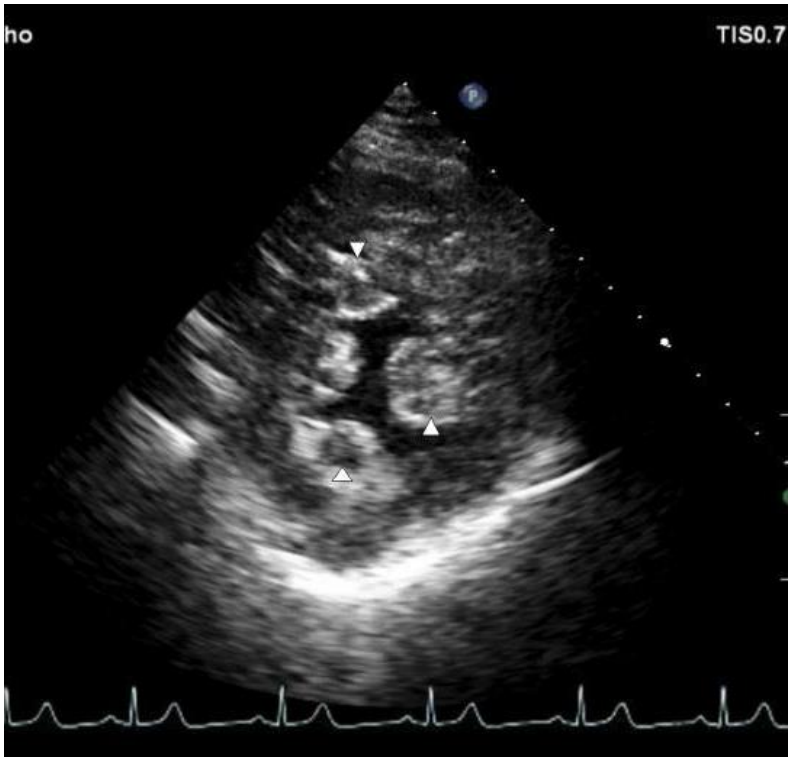

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**Figure 6: Apical 5 chamber view on echocardiography showing extensively distributed cysts with scolex cysts seen protruding into cavity and left ventricular outflow tract causing a moderate obstruction (Velocity max-3.0meter/sec)**

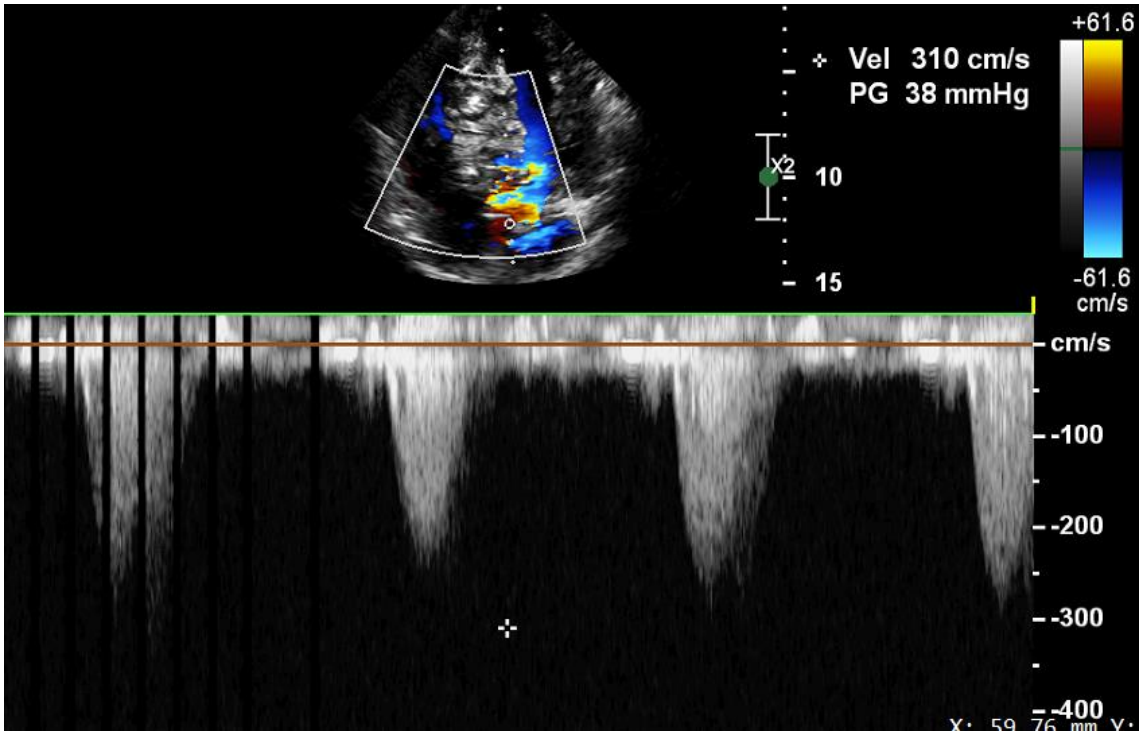


**Figure 7: Excisional specimen of conjunctival cyst and microscopic sections of excised cyst showed fragments of tissue lined by stratified squamous epithelium and a separate fragment shows a cyst with cut section of cysticercus showing scolex and hooklets**

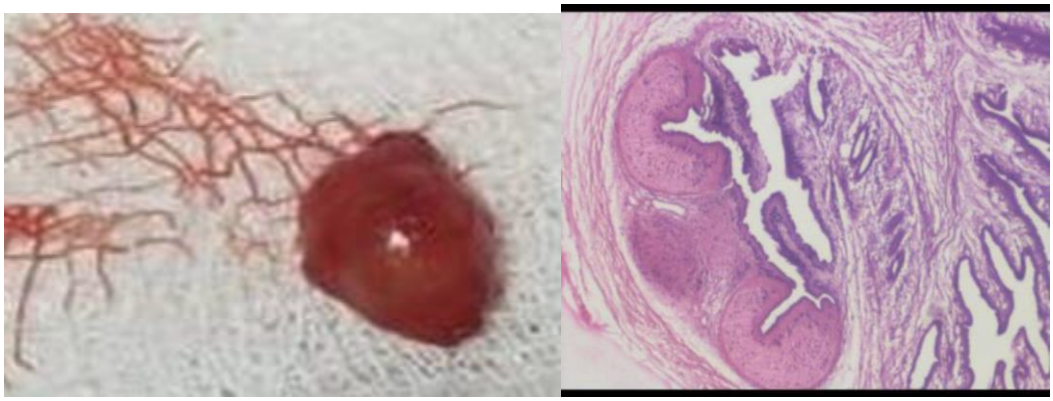

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**Figure 8: Apical 4 chamber and short axis view on echocardiography showing regression of cysts following treatment during 2 months of follow up**

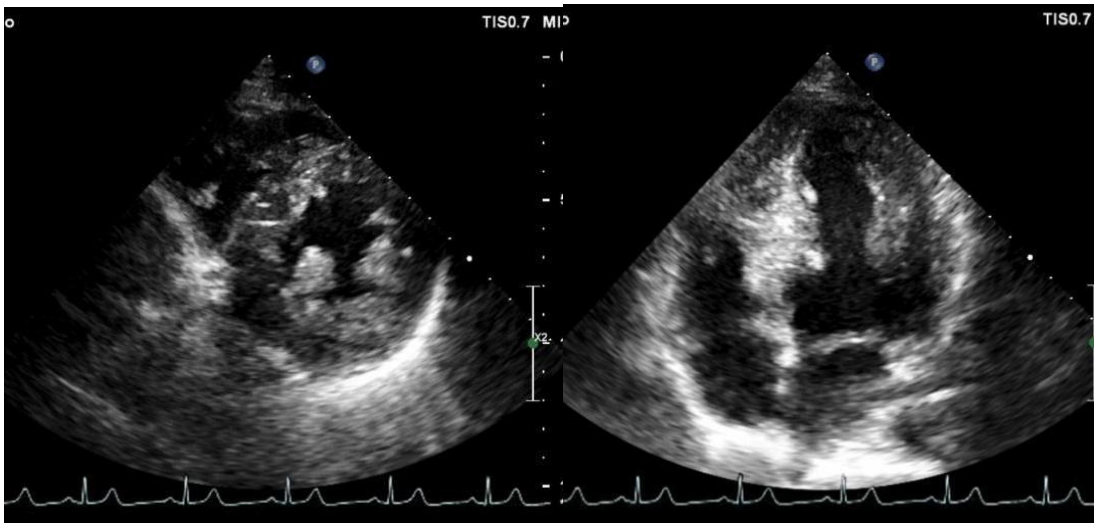
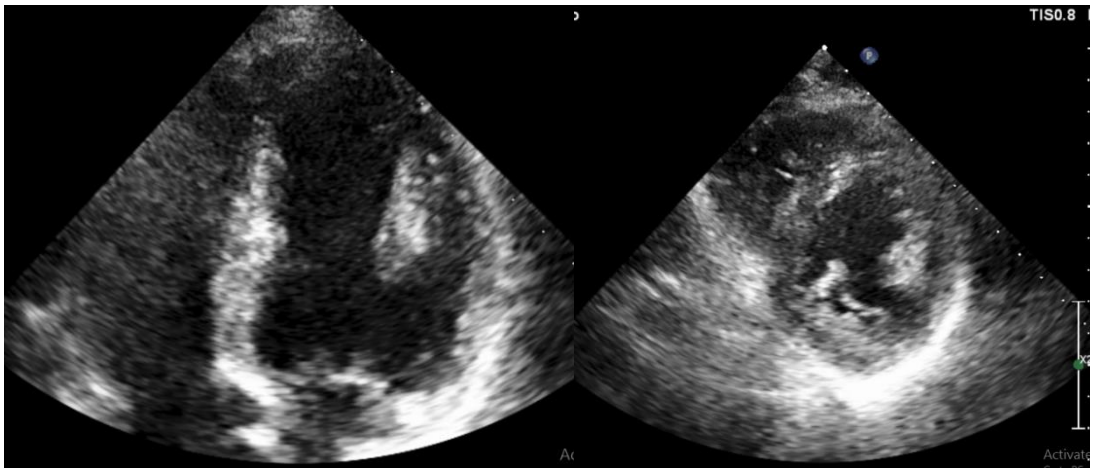



**Figure 9: Apical 4 chamber and short axis view on echocardiography near normalization of LV with regression of cysts following treatment during 6 months of follow-up**



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