

## Subcutaneous and Intramuscular Cysticercosis: “Rice grain” or “Cigar Shaped” Appearance

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### Abstract

### Case Report

Cysticercosis is a parasitic infection caused by the larval form of *Taenia solium*, a pork tapeworm. The disease is endemic in virtually all developing countries in Central and South America, Asia, and Africa [1]. Also, it can be found in non-endemic regions in immigrant populations, or in people who have traveled to endemic regions [2]. The perpetuation of this parasitic disease is related to poor sanitation and hygiene. The symptoms of cysticercosis vary according to the affected system, the cyst burden, and the host's immune response to the infection. We present a case of a 40-year-old male patient diagnosed HIV positive for 5 years ago, and treated using antiretroviral (ARV) drug, who presented with a chief complaint of fatigue and myalgia as part of a general assessment, a cerebral and thoracoabdominal CT scan was performed and revealed multiples “Rice-grain” soft-tissue calcifications. Those findings were compatible with muscular cysticercosis.

**Keywords:** Muscular cysticercosis, *taenia solium*, rice-grain, parasitosis.

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## INTRODUCTION

Cysticercosis refers to the larval form of infection of *Taenia solium*. It is caused by ingestion of tapeworm eggs through a fecal-oral transmission or auto-infection. Ingested ova, *Taenia solium*, penetrate the small bowel, and disseminate hematogenously to other organs [3]. Neurologic system is the most involved in cysticercosis, but extra-cranial location is also increasingly being diagnosed. Cysticerci have a predilection for the brain, striated muscle, subcutaneous tissue and orbits. Other sites like optic nerve, liver, parotid glands, lungs and the thyroid gland can also be involved [4]. Computed tomography (CT) scan and MRI are useful in anatomical localization of the cysts and in documentation of the natural history. MRI is more sensitive than CT in neurological locations by identifying the scolex and live cysts in cisternal spaces and ventricles.

## CASE REPORT

A 40-year-old male patient diagnosed HIV positive for 5 years ago, and treated using antiretroviral

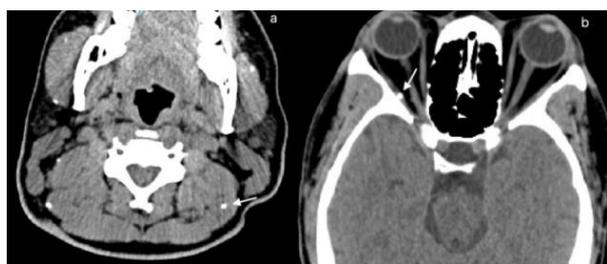
(ARV) drugs, presented with a chief complaint of fatigue, myalgia and headaches. Complete physical examination was normal, and laboratory tests were unremarkable.

Cerebral and thoracoabdominal mult-slice CT scan without intravenous contrast administration was performed, showing numerous oblong calcifications spread over all the skeletal muscles of the body, parallel to the muscle fibers, giving a “rice-grain” or “cigar-shaped” appearance (figure1-2). At both thighs, calcifications were too numerous giving the appearance of a “starry sky” (Figure 3).

On orbito-cerebral slices, only one calcification of the right external oculomotor muscle was detected. No cerebral abnormalities were seen. Cerebral MRI was indicated but the patient declined the exam because of his claustrophobia. The diagnosis of disseminated cysticercosis was retained and the patient was referred to infectious disease department to receive complete treatment.



**Fig-1: Abdominopelvic Ct-scan without intravenous contrast administration. Oblique- coronal view showing numerous calcifications parallels to muscles fibers giving a “rice grain” (right arrow) or “cigar shaped”(curved arrow) appearance.**



**Fig-2: Axial slices of Ct-scan showing calcifications relating to cysticercosis: “Rice grain” at neck muscles (a) (white arrow), calcification of right external oculomotor muscle (b).**



**Fig-3: Axial slice Ct-scan of thighs showing numerous calcifications giving the appearance of a “starry sky”**

## DISCUSSION

Teniasis and cysticercosis, although caused by a worm of the Cestode class, refer to different stages of the life cycle of *Taenia solium* or *Taenia saginata*.

The disease is endemic in virtually all developing countries in Central and South America, Southeast Asia, and sub-Saharan Africa. However, due to international tourism, and increasing migration, the incidence of cysticercosis has drastically expanded not only in developing but also in developed countries.

The life cycle of *Taenia solium* is complex with two or more hosts. In the 'normal' life cycle of the parasite, undercooked pork meat containing larval cysts is eaten then larva mature into adult intestinal tapeworms. This condition is known as taeniasis and occurs only in the human host. In this case the pig acts as an intermediate host by ingesting food contaminated with eggs shed from the human feces. This is distinct from Cysticercosis which is caused by the presence of the parasite in its larval stage in tissues of intermediate hosts.

In cysticercosis, humans are an accidental intermediate host when they ingest eggs excreted in the feces of a human carrier of the pork tapeworm. This condition is due to poor habits of hygiene, poor sanitation, and improper preparation and cooking of food [5]. Posterior hematogenous dissemination of larvae from the gut leads the cysts to different human tissues where they are deposited in its latent form, and most commonly involve the brain. Cysticercosis at extra-cranial locations is also increasingly being diagnosed due to widespread use of imaging modalities [6].

Clinical manifestations of cysticercosis are highly variable in type and severity. They appear when the larva has developed, either at least 60 days after infection. The clinical expression of cysticercosis is not specific and generally depends on the number, size and location of the cysts, as well as the host's immune response to the parasite.

Neurocysticercosis is the most common form of cysticercosis. In the parenchymal location of cysticerci, seizures are the commonly symptom occurring in 50-80 percent of individuals [7]. While, in their subarachnoid locations, cysticerci cause intracranial hypertension.

Muscular and subcutaneous cysticercosis is frequently asymptomatic, and its discovery is often fortuitous during the realization of radiological examinations for pathology. However, sometimes cysticercosis can manifest as small painless mobile nodules that disappear over time, myalgia, or pseudo-muscle hypertrophy.

Radiological features of subcutaneous and muscular cysticercosis are suggestive and specific. In the acute stage, the typical radiological semiology is a cystic lesion containing an eccentric tissue or calcified structure, suggestive of a scolex. In the chronic stage,

cysticerci appear as oblong calcific specks in the skeletal muscles parallel to the muscle fibers, giving a characteristic appearance as “rice-grain” or “cigar-shaped” calcifications. When these calcifications are numerous, they give the appearance of a “starry sky” visible on X-ray imaging.

Cysticercosis outside the central nervous system does not usually need treatment. Nevertheless, surgical excision may be indicated in the case of abscess complicating an isolated localization [8].

## CONCLUSION

Neurocysticercosis is the most common parasitic infestation of the central nervous system, and the most common cause of acquired seizures in developing countries. Many of these patients do not have typical radiological lesion or positive serology. In such circumstances, the imaging of soft tissues may show “rice-grain” or “cigar shaped” calcification guiding the diagnosis and help to differentiate it from the main differential diagnosis which is tuberculosis.

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