

Cysticercosis in a Palpable Nodule - Not a Rare Entity but Entailing a Chance Diagnosis

Dr. Ph Priyanca Singha¹, Dr. Barnali Maiti², Dr. Shubham Bhattacharya³

¹Junior Resident Post Graduate Trainee, Department of Pathology, Burdwan Medical College, West Bengal

²Demonstrator, Department of Pathology, Burdwan Medical College, West Bengal

³Assistant Professor, Department of Pathology, Burdwan Medical College, West Bengal

Abstract: This study presents a comprehensive examination of a case involving a 24 - year old female with a nodular swelling in the right thigh, diagnosed as myocysticercosis through various diagnostic modalities. Cysticercosis, a parasitic infection caused by the larval form of the tapeworm *Taenia solium*, is highlighted as a global health concern with a significant incidence in Southeast Asia, Latin America, and South Africa. The paper outlines the diagnostic journey of the patient, utilizing ultrasonography (USG), Magnetic resonance imaging (MRI) and Fine Needle Aspiration Cytology (FNAC), the latter of which confirmed the presence of cysticercosis through the identification of hooklets and other parasitic fragments. The discussion delves into the lifecycle of *Taenia solium*, modes of transmission, and the clinical significance of cysticercosis, emphasizing the role of FNAC in offering a rapid, cost - effective diagnosis. This case underscores the critical need for heightened awareness and diagnostic acumen in recognizing and managing cysticercosis, particularly in endemic regions.

Keywords: Cysticercosis, Myocysticercosis, Fine Needle Aspiration Cytology (FNAC), *Taenia solium*, Diagnostic Modalities

1. Introduction

Cysticercosis is caused by a parasitic tissue infection caused by encysted larval form of tape worm *Taenia solium* and usually manifests as painless subcutaneous or intramuscular nodules of long duration. It is a common disease worldwide, but actual incidence is often underestimated. It is endemic in Southeast Asia, Latin America and South Africa [1]. Fine needle aspiration (FNAC) has now emerged as a diagnostic modality which is inexpensive and is an outpatient technique for the evaluation of nodules caused by parasites. Kung *et al.* in 1989 were the first to highlight the diagnostic role of FNAC in cysticercosis [2]. Fine needle aspiration cytology plays a significant role in rapid and easy detection of cysticercosis specifically when one presents with nodular superficial palpable swelling. We present a case of a palpable nodular thigh swelling in a 24 - year old Hindu female.

2. Case Report

A 24-year-old Hindu female presented with a small swelling of 2.5 centimetres in diameter in lower aspect of right thigh. Patient was advised for an USG of right thigh to arrive at a diagnosis.

USG findings showed one small thick - walled cystic SOL (24 x22 x16mm) within muscle belly of vastus lateralis (anterolateral to the lower third of right thigh); the lesion is hypoechoic, surrounded by minimal inflammation. The depth of the SOL is 8mm with clear internal anechoic fluid and tiny echogenic foci probably scolex. (fig 1)

The findings are in favor of Myocysticercosis at lower part of right thigh.

MRI findings (P+C) showed a cystic intensity lesion with peripheral enhancement and surrounding inflammation of

right lower thigh involving the vastus lateralis muscle which suggested the possibility of Myocysticercosis. (fig 2)

FNAC from nodular swelling on lower lateral border of right thigh was done and the aspirate was 4ml chocolate coloured muddy fluid, microscopically the smears showed plenty of neutrophils, eosinophils, cyst macrophages and occasional large hooklets and fragmented elements resembling parts of parasitic tegument and parenchyma. So the features were suggestive of Cysticercosis

3. Discussion

The word "Cysticercus" is derived from two Greek words, "Kystis" meaning cyst and "Kertos" meaning tail due to its appearance [3]. It is acquired in humans by drinking contaminated water, by eating undercooked pork or by consuming raw vegetables which were contaminated by eggs of *T. solium* which are excreted in stool of people having adult tapeworm, or by autoinfection. The definitive host of *Taenia solium* is human and intermediate host is pig. The life cycle of tapeworm is characterized by different stages of development, which requires hosts to harbour eggs, oncospheres, larvae or adult worms to manifest the disease. It may infect brain, muscle, or other tissues and is one of the common causative agents of adult - onset seizure disorder in developing countries.

Cysticercus cellulosae, the larval form of *Taenia solium* is the cause of Cysticercosis. The adult form resides in the human intestine and attaches to the intestinal wall by a scolex, following which it sheds gravid proglottids. These are excreted into the water or soil and the eggs are released which are then consumed by an intermediate host, oncospheres are released which burrow through intestinal wall to reach various tissues of the host.

Gradually the fate of the inflammatory response culminates into degeneration of the parasite, formation of granuloma and calcification. Diagnosis is usually done by histopathological examination. Other imaging modalities like Xray, CTScan, MRI may be helpful. Serological tests like ELISA, radioimmunoassay, complement fixation test can also aid in making a diagnosis.

Diagnostic criteria for cysticercosis on FNAC smear is identification of parasitic fragments like bluish fibrillary structures sometimes with honey combing, teguments thrown into round wavy folds, scolex, hooklets and hyaline membrane surrounding it. Cysticercus may show clean acellular background or reactive cellular infiltrate in varying proportions - lymphocytes, plasma cells, eosinophils, neutrophils, giant cells etc. There may be foreign body granuloma, necrosis and calcification which suggest parasitic cyst^[4].

4. Conclusion

The diagnosis of myocysticercosis, especially when supported by clinical and radiological evidence, is significantly enhanced by the identification of parasitic elements such as hooklets in FNAC samples. This case reinforces the value of FNAC as a rapid, inexpensive, and highly effective diagnostic tool in the management of cysticercosis. It not only facilitates the early detection and treatment of this parasitic infection but also exemplifies the necessity for healthcare professionals to maintain a high index of suspicion for cysticercosis in patients presenting with nodular swellings, particularly in areas where the disease is endemic. Through comprehensive diagnostic approaches and increased awareness, the burden of cysticercosis can be reduced, leading to improved patient outcomes and a decrease in the prevalence of this disease globally.

References

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Figure 1: USG - One small thick - walled cystic SOL measuring 24x22x16mm within muscle belly of vastus lateralis

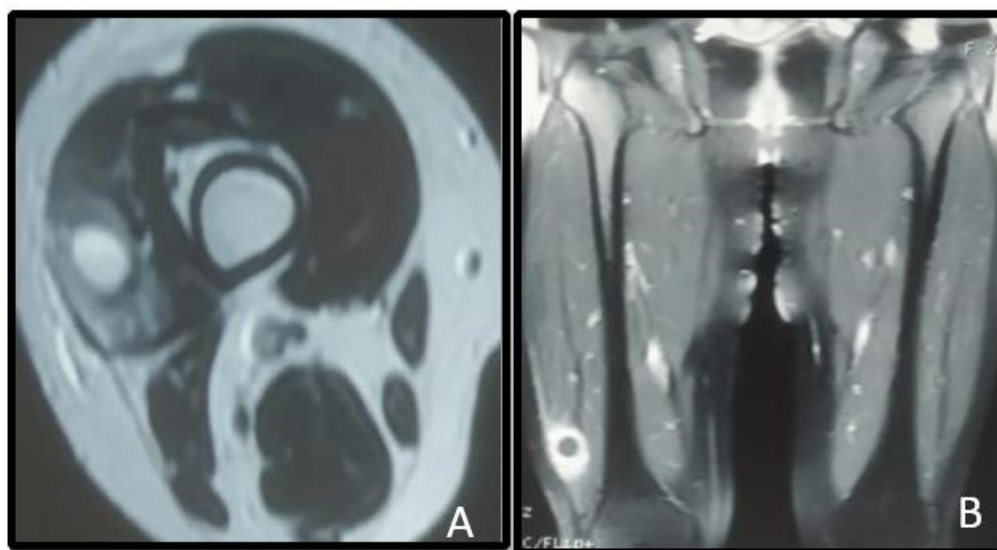


Figure 2: (A, B) MRI - Cystic intensity lesion with peripheral enhancement and surrounding inflammation right lower thigh involving vastus lateralis

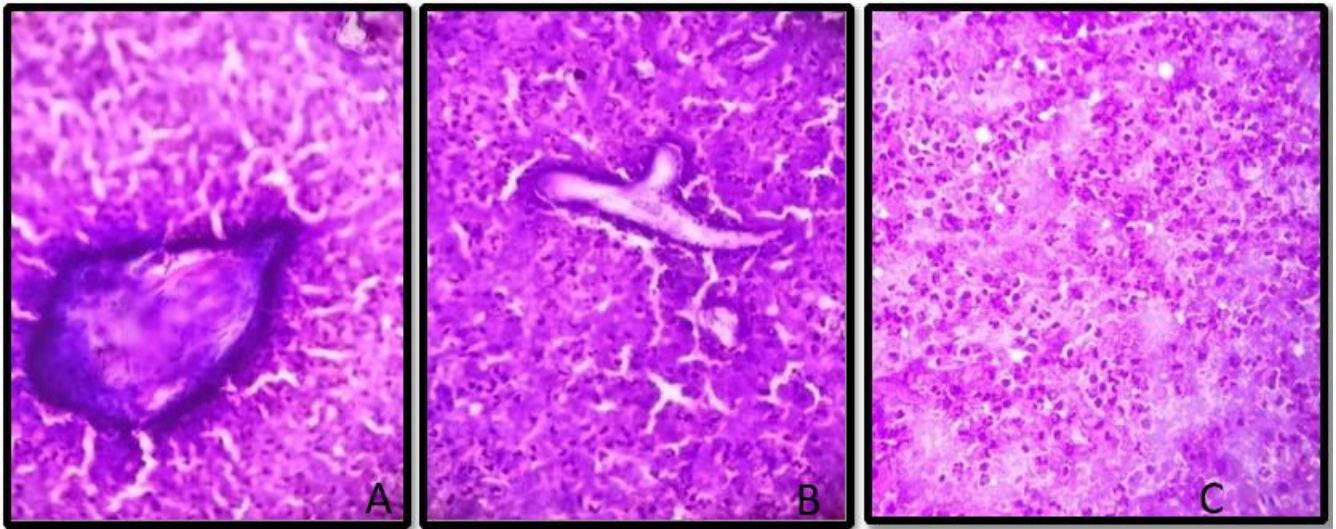


Figure 3: A Fragmented element resembling parts of parasitic tegument and parenchyma; B - large hooklet; C - Smears showing plenty of neutrophils, eosinophils and cyst macrophages (H&E; 40X)