



The hidden parasite in palpable nodule: Cysticercosis on cytology

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Abstract

Cysticercosis is the most common parasitic infection of soft tissue. It is more common in northern parts of India. Fine needle aspiration cytology (FNAC) is a useful and rapid technique in the diagnosis of Cysticercosis. We report a case of cysticercosis in a 19-year-old female patient, who presented with a subcutaneous swelling in the right arm which was diagnosed on FNAC. FNAC in cysticercosis is a low-cost outpatient procedure. It is one of the tools for preoperative diagnosis which obviates the need for open biopsy.

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Introduction

Human cysticercosis caused by *cysticercosis cellulosae*, commonly manifests as subcutaneous and intramuscular nodules. It is endemic in America, Africa and Asia. It is more common in northern parts of India. The common sites of involvement are brain, muscle, eye and heart. [1,2] The preoperative diagnosis of cysticercosis can be made by radio imaging [computed tomography (CT) scan and magnetic resonance imaging (MRI)] and serological tests like complement fixation test, hemagglutination, radioimmunoassay and enzyme linked immunosorbent assay (ELISA). [2] Fine needle aspiration cytology (FNAC) is now available as a tool for the diagnosis of subcutaneous cysticercosis. Different parasite such as filariasis, cysticercosis and hydatid disease can be detected by this technique. [3] This study highlights the cytomorphological features of subcutaneous cysticercosis diagnosed by FNAC.

Case Report

A 19-year-old female patient presented with a swelling on the right upper arm of two week duration with difficulty in movement around the elbow joint. The mass was 4×4.5 cm in size, soft in consistency, and was in the subcutaneous plane. It was not associated with pain. The clinical diagnosis was that of a lipoma. FNAC was done using 22G needle and 20mL syringe. Aspiration yielded purulent fluid. The smears were air dried as well as wet fixed in 95% ethyl alcohol and stained with May Grunwald Giemsa, haematoxylin, and eosin and Papincolaou stains. On cytology, fragments of bluish fibrillary material with interspersed small nuclei were seen. Thick blue spherules within the substance of the fibrillary material gave a honeycomb appearance. Mixed inflammatory cells consisting of neutrophils, eosinophils, lymphocytes, and histiocytes were seen surrounding the fibrillary material. A diagnosis of parasitic material was offered on cytology (fig. 1). A final diagnosis of subcutaneous cysticercosis was made. The patient also received oral antihelminthic therapy and is doing well.

Discussion

Cysticercosis is a common health problem in developing countries. It is the larval infestation of the cestode *T. Solium*, with man occasionally serving as the larval host. It is acquired in humans by drinking contaminated water or by eating uncooked vegetables infected with eggs. Besides this, a man harbouring the adult worm may auto infect himself either due to unhygienic personal habits or by reversal of peristaltic movement. [1] Fully developed cysticerci are opalescent, milky white cysts, elongated to oval and about 1 cm in diameter. The cyst contains fluid and a single invaginated scolex. The scolex has a rostellum, four suckers and 22–32 small hooklets. The cyst

wall is multilayered, 100–200 μ m thick and covered by microvilli. [4]

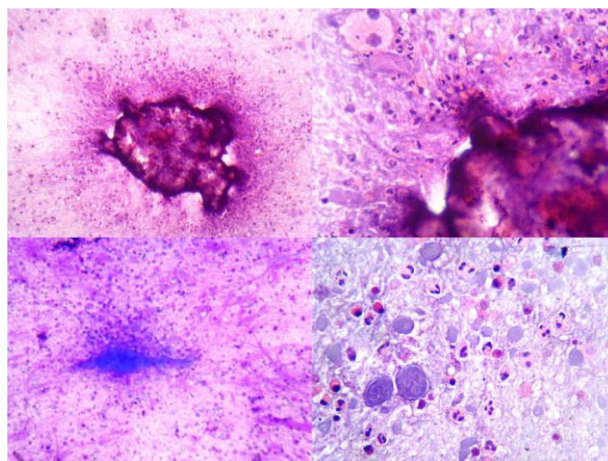


Figure 1a. Cytological smears show thick fibrillary material (100x H&E stain); **Figure 1b.** Cytological smears show thick fibrillary material surrounded by mixed inflammatory infiltrate (1000x H&E stain); **Figure 1c.** Cytological smears show mixed inflammatory infiltrate (100x Giemsa stain); **Figure 1d.** Cytological smears show bluish spherules admixed with mixed inflammatory infiltrate (1000x Giemsa stain)

No inflammatory response is seen against viable cysticerci. However, when they degenerate, there is an infiltration of inflammatory cells, sometimes associated with foreign body granulomas. The viable cyst and the necrotic and calcified lesions all have distinctive cytomorphological patterns. The viable cyst yields clear fluid and shows fragments of bladder wall in a clear acellular background. Aspirates of necrotic lesions may contain fragments of bladder wall, including calcareous corpuscles, as seen in this case and sometime detached single hooklets are also seen. [5]

The cytomorphological identification of larvae in FNAC smears by different workers has widened the diagnostic utility of FNAC in skin nodules. [6] Suspicion about a parasitic lesion starts with the presence of eosinophils, neutrophils, palisading histiocytes and giant cells in an aspirate from subcutaneous nodule. The diagnosis of cysticercus is made when fragments of larval cuticle and parenchyma are identified. The presence of scolex in cytology smears is an uncommon finding. [7]

The palpable parasitic nodules are often clinically misinterpreted as benign mesenchymal tumors such as lipoma, neurofibroma, or as lymphadenopathy. Various diagnostic modalities employed to detect cysticercosis include radiology, serology, and pathological examination. CT scan and MRI, though sensitive in diagnosing cysticercosis especially when the parasite involves the CNS, are very expensive. Serological tests are useful if positive but cannot rule out the disease with negative

results. FNAC has emerged as a widely acceptable method for the diagnosis of cysticercosis [8,9].

Subcutaneous or intramuscular palpable parasitic nodule is most commonly due to cysticerci. Other parasites producing similar clinical presentation include coenuri, the larval form of tapeworm of the genus *Multiceps* and spargana, larva of *Spirometra mansonoides* [10].

Conclusion

FNAC in cysticercosis is a low-cost outpatient procedure which prove to be a tool for diagnosis and even obviates the need for open biopsy.[9] The cytological diagnosis is quite straightforward in cases where actual parasite structure is identified in the smears. However, in other cases, the presence of eosinophils, histiocytes which may be in palisaded clusters or not, a typical granular dirty background, etc., are the features which should always alert the pathologist to this possibility.

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Competing Interests

None declared.

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