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Case Report

A GLIMPSE OF HOOKLET BY CYTOLOGIST'S EYE REFLECTS CYSTICERCOSIS: A CASE REPORT

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Cysticercosis caused by the larval stage of *Taenia solium* usually manifests as subcutaneous and intramuscular nodules. Clinical presentation may mimic various diseases depending upon site of involvement, thereby making the diagnosis challenging. In such cases significance of Fine Needle Aspiration Cytology (FNAC) cannot be undermined as it is minimally invasive, cost effective outpatient procedure and obviates the need of histopathological examination in majority of the cases. Here we present a case report emphasizing the value of a thorough careful search by the cytologist as mere visualization of a single hooklet can avert excision biopsy, along with review of few reported cases.

Keywords: Cysticercosis, FNAC, Hooklets, Inflammation

INTRODUCTION

Cysticercosis presenting as palpable nodules are frequently misinterpreted by the clinicians. Cytopathology has been considered as a valuable diagnostic modality in cysticercosis since the first case report in 1989 (Kung *et al.*, 1989). Cysticercosis has varied cytomorphological patterns; firm diagnosis rests on visualization of actual parasitic structure (Gill *et al.*, 2010; Kodiatte *et al.*, 2013). We here present a case of myocysticercosis diagnosed by FNAC on the basis of hooklets, along with review of few reported cases, emphasizing that the cytopathologist should be familiar with different cytomorpological features of cysticercosis as the eye sees only what the mind knows.

CASE REPORT

A 49 year old male presented with lump in right lower abdomen for last one month with sudden increase in size associated with pain. On examination, there was a slight bulge in right side of lower abdominal wall. The overlying skin was entirely normal. On palpation, the swelling was diffuse, firm, measuring approximately 5 x 4 cm, tender and not adherent to the overlying skin. No other significant findings were noted in general examination. Provisional diagnosis of appendicular lesion was considered in view of site of the lesion and related symptomatology. Routine biochemical and haematological investigations were within normal limits except eosinophilia. Ultrasonography demonstrated

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heteroechoic collection of 3.5 x 4 cm in muscle layer and possibility of ruptured cyst was considered.

With this background information, FNAC was done and the smears were stained with May Grunwald Giemsa (MGG) stain, papanicolaou stain and Ziehl Neelsen stain. On aspiration, whitish fluid was yielded and smears were predominantly composed of sheets of inflammatory cells rich in neutrophils admixed with lymphocytes, histiocytes and eosinophils in the background of necrosis. Few collections of epithelioid cells along with foreign body type of multinucleated giant cells were also seen. ZN stain was non-contributary. In addition, few fragments of parasitic bladder wall were also noted in one smear (Figure 1). On further screening, a single detached hooklet lying in the background of inflammatory cells was also discernible (Figure 2) clinching the diagnosis of cysticercosis.

For further workup the patient was referred for skull X-ray and ophthalmological opinion. No evidence of cysticercosis was noted in any other site. The patient was started oral antihelminthic therapy. After completion of regime, patient was asymptomatic with dissolution of swelling as confirmed by ultrasonography.

DISCUSSION

Human cysticercosis is endemic in Central and Eastern Europe, South America, Africa and topical countries like India (Neelam and Kiran, 1991). Though taenia solium can infest any organ; predilection is towards skeletal muscles, subcutaneous tissues, eyes and central nervous system (Handa *et al*., 2008).

The parasitic palpable nodules are often misinterpreted as benign mesenchymal lesions like neurofibroma or lipoma. Though histopathological examination is considered as the gold standard (Suchitha *et al.,* 2012); FNAC

Figure 1: Photomicrograph Showing Fragment of Parasitic Bladder Wall in the Background of Mixed Inflammatory Infiltrate x10x

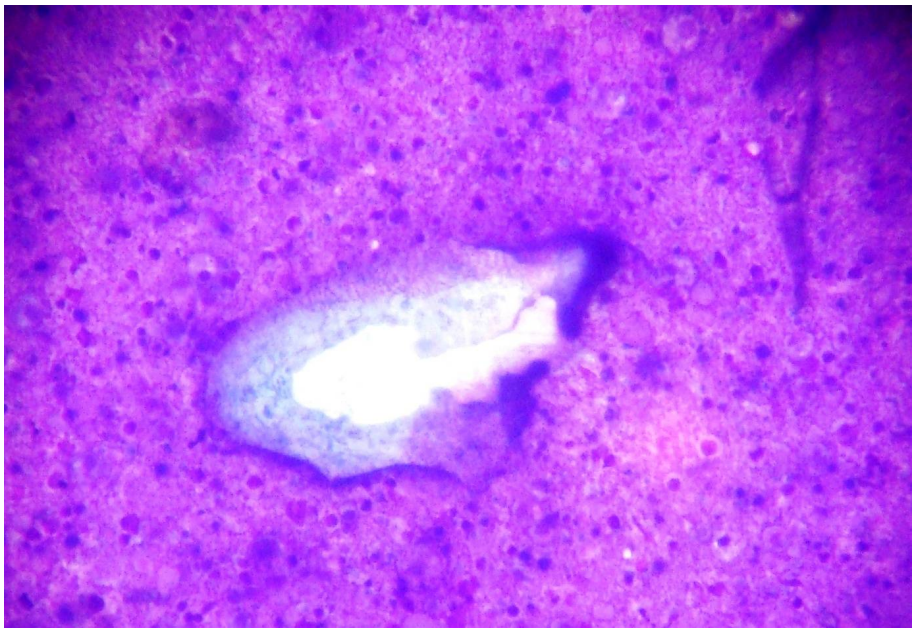
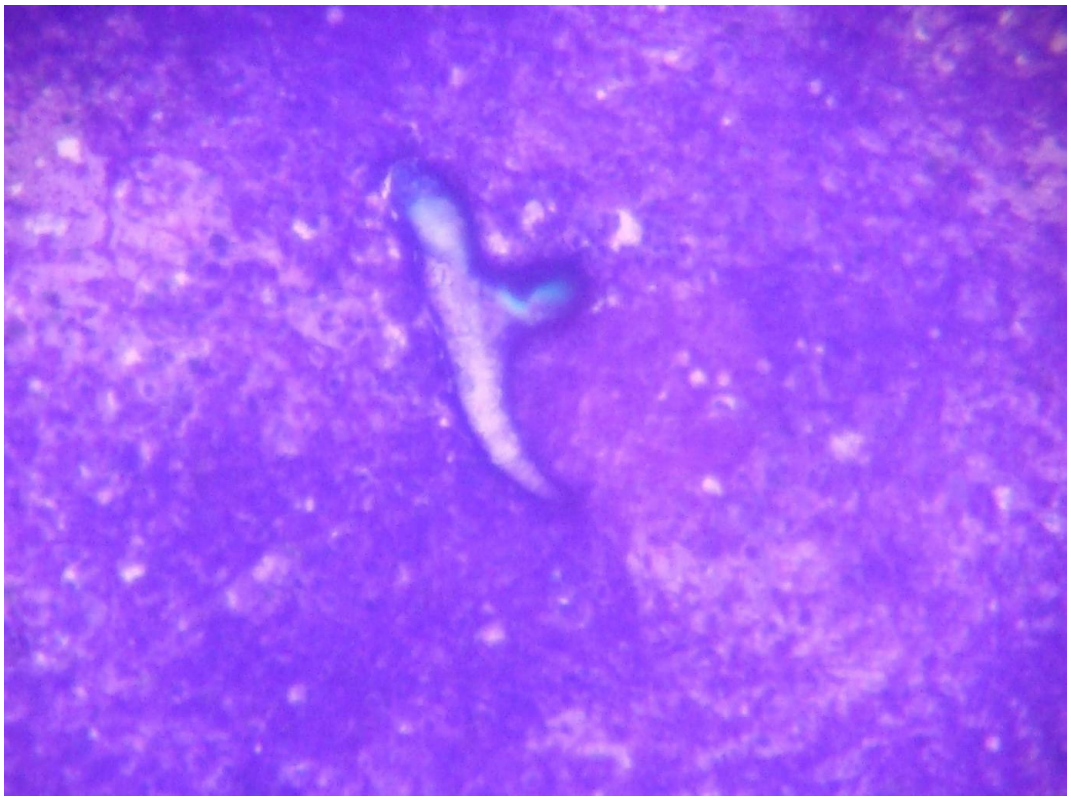


Figure 2: Photomicrograph Showing Single Detached Hooklet in the Inflammatory Background x10X



is attaining popularity and acceptance because identification of parasitic structure in smears increases the validity and accuracy of diagnosis thus prompting early therapeutic intervention.

The cytomorphological findings in cysticercosis vary from case to case as reported in various studies (Table 1). The pattern ranges from simple inflammatory infiltrate through bladder wall

Table 1: Showing Comparison of Reported Cases

Study	Year of Publication	Number of Cases Studied	Hooklets n(%)	Bladder wall Fragments n (%)	Parenchyma n (%)	Inflammation n (%)
Arora et al.	1994	298	33(11.07%)	203(68.12%)	-	298(100%)
Khurana et al.	1999	132	11(08%)	90(68%)	06(04%)	24(18%)
Patnayak et al.	2006	05	01(20%)	05(100%)	05(100%)	05(100%)
Adhikari et al.	2007	10	-	09(90%)	01(10%)	03(30%)
Gill et al.	2010	22	-	09(41%)	-	13(59%)
Elhence et al.	2012	02	-	02(100%)	02(100%)	02(100%)
Kodiatte et al.	2013	30	01(3.3%)	28(93.3%)	28(93.3%)	30(100%)

teguments to parenchymal portion with invaginated larval fragments. The bladder wall is usually noticed as a tegument layer thrown in wavy folds (Gill *et al.*, 2010; Handa *et al*., 2008; Kamal and Grover, 1995) and parenchyma may be observed in the form of bluish fibrillary stroma or at times spiral canal is discernible along with calcospherules (Gill *et al.*, 2010; Handa *et al*., 2008). Invaginated larval fragments are present in the form of hooklets and/or scolex. The inflammatory infiltrate may comprise of eosinophils, neutrophils, lymphocytes, histiocytes, epithelioid cells and/or giant cells (Arora *et al*., 1994; Kamal and Grover, 1995).

Though visualisation of actual parasite structure is essential for definitive diagnosis; usually only inflammation is demonstrable in the smears and diagnosis suggestive of parasitic cyst is given. Inflammation has been cited as the commonest component either admixed with parasitic elements or at times as the only cytological finding (Gill *et al.*, 2010; Kodiatte *et al.,* 2013; Handa *et al*., 2008; Suchitha *et al*., 2012; Arora *et al.*, 1994; Patnayak *et al.,* 2006; Elhence *et al.,* 2012; Kamal and Grover, 1995; Sawhney and Agarwal, 2013). Among the definitive cytological evidence, bladder wall fragments have been observed in 41%-100% cases (Table 1). Although hooklets have been observed by few (3.3%-20% cases); an intact scolex is a rare finding (Kung *et al.*, 1989). In the index case, in addition to inflammation, we were able to identify hooklet as well as bladder wall fragments. Significant inflammation rich in neutrophils in our case can be explained by rupture of the cyst as indicated in ultrasonography report leading to clinical presentation in form of pain and increase in size of swelling.

The cytomorphological pattern primarily depends upon viability of the cyst. If the cyst is viable, usually fragments of bladder wall are observed in acellular background. Necrotic lesions show bladder wall fragments along with invaginated portions, calcareous corpuscles or hooklet. Smears prepared from calcified cysts, show only single lying detached hooklet (Suchitha *et al.,* 2012; Nanjeevan *et al.,* 2006). In the index case, probably it was necrotic and calcified lesion.

While examining the smears, cytopathologist should get alert about parasitic infection if inflammatory infiltrate is rich in eosinophils, histiocytes and multinucleated giant cells in a necrotic background and in such instances, thorough search for the parasitic fragments should be done.

CONCLUSION

Diagnosis of cysticercosis may be challenging at times as clinical presentation mimics various diseases; high index of suspicion is essential to solve the diagnostic dilemma. FNAC can be regarded as a valuable diagnostic tool in such instances. However a careful search for parasite is essential for accurate diagnosis and proper treatment of the patient.

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REFERENCES

1. Kung I T M et al (1989), “Soft tissue cysticercosis: Diagnosis by Fine Needle Aspiration”, *American Journal of Clinical Pathology,* Vol. 92, Issue 6, pp. 834-5.
2. Gill M *et al* (2010), “ Cytomorphological spectrum of subcutaneous and

intramuscular csysticercosis: A study of 22 cases", *Journal of cytology,* Vol. 27, Issue 4, pp.123-6.

3. Kodiatte T *et al* (2013), "*Cysticercus cellulosae* lies in the eyes of the beholder", *Ann Trop Med Public Health*, Vol. 6, Issue 2, pp. 201-5.
4. Neelam D K and Kiran M (1991), "Fine Needle Aspiration Cytology of subcutaneous cysticercosis", *Diagnostic Cytopathology,* Vol. 7, Issue 2, pp. 223-4.
5. Handa U *et al* (2008), "Fine Needle Aspiration in the diagnosis of subcutaneous cysticercosis", *Diagnostic cytopathology*, Vol. 36, Issue 3, pp. 183-7.
6. Suchitha S *et al* (2012), "Fine Needle Aspiration Cytology of Cysticercosis - A Case Report", Case Rep Infect Dis, Article ID 854704, 2 pages.
7. Arora V K *et al* (1994), " Cytomorphologic Panorama of Cysticercosis on Fine Needle Aspiration: A review of 298 cases", *Acta Cytol*, Vol. 38, pp. 377-80.
8. Khurana N and Jain S (1999), "Cytomorphological spectrum of cysticercosis- a review of 132 cases", *Indian J Pathol Microbiol*, Vol. 42, Issue 1, pp. 69-71.
9. Patnayak R *et al* (2006), "Cysticercosis: The Hidden Parasite With Short Review Of Literature", *The Internet Journal of Infectious Diseases*, Vol. 6, Issue 1, pp. 13
10. Adhikari R C *et al* (2007), "Diagnosis of subcutaneous cysticercosis in fine needle aspirates: A study of 10 cases", *Nepal Medical College Journal,* Vol. 9, Issue 4, pp. 234-8.
11. Elhence P *et al* (2012), "Cysticercosis presenting as cervical lymphadenopathy: A rare presentation in two cases with review of literature", *Nigerian journal of clinical practice*, Vol. 15 Issue 3, pp. 361-3.
12. Kamal M M and Grover S V (1995), "Cytomorphology of subcutaneous cysticercosis: A report of 10 cases", A*cta Cytol,* Vol. 39 pp. 809-12.
13. Sawhney M and Agarwal S (2013), "Cysticercosis: Hooked by a hooklet on Fine Needle Aspiration Cytology - A case report", Case Rep Infect Dis, Article ID 315834, 2 pages
14. Nanjeevan S *et al* (2006), "Are all subcutaneous parasitic cysts cysticercosis ?", *Acta Cytologica* , Vol. 50, Issue 1, pp. 114–5.