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CASE STUDY

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A rare case of scalp space occupying lesion caused by cysticercosis without involvement of brain

Upadhyay PK[1*], Gupta U[2], Singh R[2], Pandey S[2], MishraY[2], Pandey P[3]

1.Head, Department of neurosurgery, Institute of Human Behaviour and Allied Sciences (I.H.B.A.S.), Dilshad Garden, New Delhi 110095, India
2.Junior Resident, Department of Neurosurgery, I.H.B.A.S., Dilshad Garden, New Delhi 110095, India
3.Senior Resident, Department of Neurosurgery, I.H.B.A.S., Dilshad Garden, New Delhi 110095, India

*Corresponding author: Dr P.K Upadhyay Head Of the Department, Institute of Human Behaviour and Allied Sciences, Email id: upadhyaypk5@gmail.com

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General Note
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ABSTRACT

Scalp occupying lesion was being evaluated for infectious or tumorous lesion in middle age female which was removed under magnification and confirmed on histopathology as a lesion of cysticercosis.It is a rare presentationof scalp space occupying lesion of cysticercosis without brain involvement.

Keywords: Cysticercosis, Neurocysticercosis, scalp space occupying lesion, scalp tumor, taeniae solium infestation.

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Abbreviations: NCCT – Non Contrast Computed tomography, CECT – Contrast Enhanced Computed Tomography, FNAC – Fine Needle Aspiration Cytology

1. INTRODUCTION

Earliest knowledge of tapeworms was found in works of ancient Egyptians dated 2000BC (Wadia N H, Singh G, 2002). Cysticercosis was described by Johannes Udalric Rumler in 1555, but connection between tapeworm infection and cysticercosis was not established. It was the work of Friedrich Kuchenmeister in around 1850 on prisoners for execution where he fed them with pork meat infected with cystecrci and later recovered adult taeniae from their intestine,which established a link between taeniaesolium and cysticercosis (Küchenmeister, 1861).Taeniasis and Cysticercosis are two distinct disease of sametaenia worm infection. Taeniasis is caused by eating uncooked pork meat with cysticerci larvae in their muscles when pig is usual intermediate host, leading to formation of adult tapeworm in intestine, while Cysticercosis occurs when human acts as intermediate host while eating the eggs of tapeworm either through uncooked food or drinking water, which hatches into larvae in intestine and then pierces the intestinal wall and circulate blood to involve musculature (*Carter,* 2013). *As illustrated in Photo 1,* autoinfection may occur if an individual with an egg-producing tapeworm ingest eggs derived from his or her own faeces (Roth, 1926).

2. CASE REPORT

A 44 year old female came with chief complains of headache and painful swelling in right temporal region of4 months duration. Pain was insidious in onset, dull aching and having a score of 7/10 on Visual Analogue Scale (VAS). Swelling was insidious in onset, gradually progressive and non-pulsatile. There was no history of fever, trauma, swelling in any other part of body, no history of difficulty in mastication, swallowing or speech, no history of photophobia, hearing loss or ear discharge, no history of abdominal pain, fullness, loss of appetite or diarrhoea. Patient was vegetarian by diet with no history of pets at home. There was no history of any other comorbidities and no relevant family history.

General examination was essentially normal. On local examination a solitary , hard, diffuse swelling of size 4x5cm,non-pulsatile, non-fluctuant, tender, normal overlying skin, seemingly fixed to muscle, not fixed to skin, with no bony crepitus, in right temporal region. Ear examination, intraoral examination, eye examination were also within normal limit and there was no palpable lymph nodes (Photo 2).

Ultrasonography abdomen shows grade I fatty liver and rest within normal result. Stool examination shows no ova, cyst or occult blood. On contrast enhanced computed tomography (CECT) head with bone cuts an extracalvarial soft tissue swelling at right temporo-parietal convexity, non-enhancing, well defined, hypodense,cystic lesion of size 7x8 mm was noted with a pedunculated mass in the cavity along with surrounding fibro muscular tissue. There was no bony involvement (Photo 3). Fine needle aspiration cytology (FNAC) was inconclusive.

Based on clinical and radiological workup tab albendazole 400 mg 12 hourly for two weeks was given but there was no regression in swelling size nor any relief in symptoms. A complete excision biopsy was planned which was performed under local anesthesia and magnification. Intra operatively, clear cysts with whitish contents and diffuse involvement and fibrosis of overlying temporalis muscle without involvement of skin orbone was noted. Histopathological examination showed a cyst wall comprising of an outer cuticle, middle cellular, and inner reticular layer measuring 2.5x 2.0x0.8 cm. Sections also showed skeletal muscle bundles, fibrocollagenous tissue and inflammatory infiltrate comprising of lymphocytes macrophages, plasma cells and eosinophils. Findings were consistent with the diagnosis of cysticercosis. Postoperative period was uneventful and suture removal was done on day7. At the time of discharge on postoperative day 9, the swelling had completely regressed providing better cosmesis while the patient had mild residual pain, VAS score 2/10, at the operated site.

3. RESULT

This patient underwent excision of swelling under magnification and showed complete resolution of symptoms during her follow up visit. There was no evidence of recurrence of swelling or symptoms till after about 1 year after which patient lost to follow up.

4. DISCUSSION

Around 80% of patient with cysticercosis are asymptomatic (Bern C, 1999). This patient has a painful tender swelling. Cysticerci can be found anywhere in body but are most commonly detected in the brain, cerebrospinal fluid, skeletal muscle, subcutaneous tissue or eye, when it involves brain, it is commonly known as Neurocysticercosis. Neurocysticercosis is the most common infective cause of seizures in developing countries (García HH, 2003).In skeletal muscles they commonly involve muscles of mastication, muscles of facial expression, muscles of suprahyoid and posterior cervical region, tongue, buccal mucosa and lips etc. In muscle they may presentas pseudomuscular hypertrophy or atrophy, subcutaneous nodules (Markell EK, 1999).There can be diffuse painful/painless enlargement of muscles, but isolated muscle involvement without involvement of brain is rare.A diagnostic criteria illustrated in

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Table 1 isproposed by Del Brutto comprising of absolute criteria, major criteria, minor criteria, and epidemiological criteria (Del Brutto et al, 2001).

Specific therapy is not given for isolated asymptomatic intramuscular or subcutaneous cysticerci, excision of the swelling can be considered if swelling is symptomatic or progressively increasing in size or if the diagnosis is uncertain and if involvement of brain is excluded by radiological investigation. In Neurocysticercosis the mainstay of treatment is symptomatic therapy. Seizure is controlled by anticonvulsants. Albendazole (15 mg/kg for 28 days) or praziquantel (50-100 mg/kg for 15-30days) with corticosteroids are used as antiparasite therapy which may evoke inflammatory swelling around dying parasite (Nash TE, 2006). If a patient develops hydrocephalous, cerebrospinal fluid diversion is indicated (Rangel-Castilla L, 2009).Surgical excision is the mainstay treatment of intraocular cyst with perioperative use of steroid if uveitis is also present. Extraocular cysticercosis treatment has been radically changed from surgical to successful medical treatment with oral albendazole or praziquantel and oral corticosteroid cover as isolated antiparasite therapy may evoke inflammatory process leading to irreversible damage to eye (Sundaram PM, 2004).In our case cysticerci was only present subcutaneously at right temporal region without involvement of brain parenchyma, ventricles or eye. Surgical excision was done after antiparasite therapy did not show any improvement.

5. CONCLUSION

Cysticercosis is a common endemic parasitic infection which remains asymptomatic in most of the patient for which treatment is not required. Seizure occurs in neurocysticercosis for which anticonvulsant and antiparasite is the mainstay of treatment. Surgery is indicated in symptomatic swelling of muscle and intraocular involvement. Prevention is the major way of controlling cysticercosis by proper cooking of beef or pork viscera and proper washing of raw vegetables and fruits. In this case, due to rare presentation of swelling, it is proposed that cysticercosis may be considered as rare differential diagnosis in case of solitary symptomatic swelling of nonspecific diagnosis.

FUTURE ISSUES

Recent work has been done in preparation of vaccines against taenia for pig to prevent cysticercosis but none of them are efficacious. Research may be directed in development of vaccines for humans which can be more effective as human's acts as both intermediate and defenitive host, so major control of cysticercosis and taeniasis can be achieved in endemic areas. Study should be directed whether deworming of taenia by oral antiparasites 3 monthly or 6 monthly to prevent cystercosis or neurocysticercosis infestation is of value, if any.

DISCLOSURE

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Photo 1 Life cycle of taenia solium (http://www.dpd.cdc.gov/dpdx/images/parasiteImages/S-Z/Taeniasis/Taenia/LifeCycle.gif)

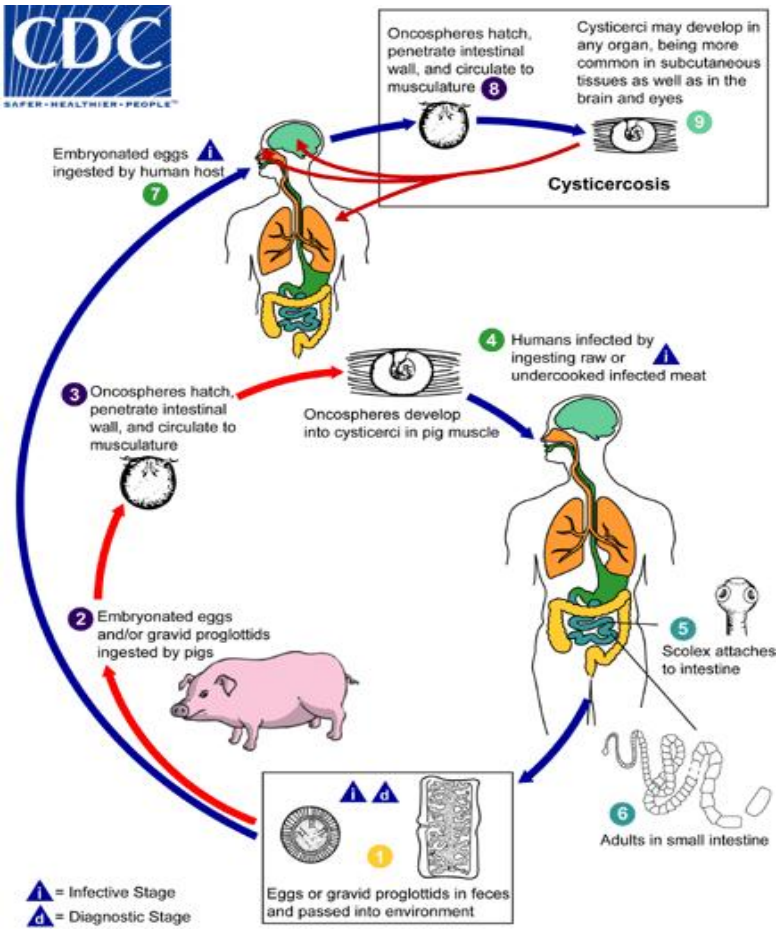

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Photo 2 Front and Lateral view of patient

Photo 3 CECT Film

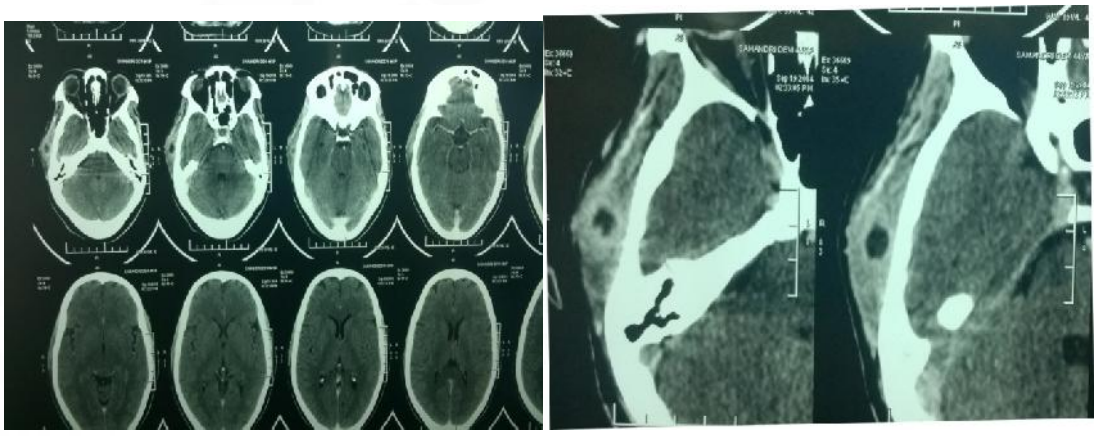

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Table 1 Diagnostic criterion for human cysticercosis

- *Absolute criteria include the following*:
  - Histologic demonstration of the parasite on a biopsy sample from the brain or spinal cord lesion
  - Direct visualization of subretinal parasites via funduscopic examination
  - Cystic lesions showing the scolex on CT scans or MRIs

- *Major criteria include the following*:
  - Lesions highly suggestive of neurocysticercosis on neuroimaging studies (CT scan or MRI showing cystic lesions without scolex, enhancing lesions, or typical parenchymal brain calcifications)
  - Serum anticysticercal antibodies demonstrated by immunoblot assay
  - Resolution of intracranial cystic lesions after therapy with albendazole or praziquantel
  - Spontaneous resolution of small, single, enhancing lesions (single ring-enhancing lesions < 20 mm in diameter in patients with seizures, normal neurologic examination findings, no evidence of active systemic disease

- *Minor criteria include the following:*
  - Lesions compatible with neurocysticercosis on neuroimaging studies
  - Clinical manifestations suggestive of neurocysticercosis (eg, epilepsy, focal neurologic signs, intracranial hypertension, dementia)
  - Positive findings from CSF enzyme-linked immunosorbent assay (ELISA) for detection of anticysticercal antibodies or cysticercal antigens
  - Cysticercosis outside the CNS

- *Epidemiologic criteria include the following:*
  - Evidence of a household contact with T solium infection
  - Individuals coming from or living in an area where cysticercosis is endemic
  - Household contact with an individual infected with T solium

- *The diagnostic categories that follow pertain to the criteria outlined in the model developed by Del Brutto et al*
  - Definite neurocysticercosis (1 of the following)
    - One absolute criterion
    - Two major criteria plus 1 minor criterion and 1 epidemiologic criterion
  - Probable neurocysticercosis (1 of the following)
    - One major criterion plus 2 minor criteria
    - One major criterion plus 1 minor criterion plus 1 epidemiologic criterion
    - Three minor criteria plus 1 epidemiologic criterion

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