DOI: 10.7860/JCDR/2024/66933.19198

Case Report

Paediatrics Section

Myocysticercosis Presenting as Incomplete Claw Hand: A Rare Presentation of Cysticercus

JYOTI GULATI[1], NIDHI BEDI[2], PAYAL AGRAWAL[3], PANKAJ ABROL[4]

ABSTRACT

Human cysticercosis is an infection with the larval form of *Taenia solium* that commonly involves the central nervous system. Due to the infection, isolated muscular involvement is rare, and very few cases have been reported in the literature. Hereby, the authors present a rare instance of isolated muscular cysticercosis in a 15-year-old girl, resulting in an incomplete claw hand due to the compression of both the ulnar and median nerves. The patient had been experiencing swelling on the anterior aspect of her left forearm for eight months, with recent aggravation. The swelling was gradually followed by an inability to fully extend the middle and ring fingers for the past six months. The patient's laboratory results were within normal limits, and ultrasound and Magnetic Resonance Imaging (MRI) of the forearm confirmed the presence of cysticercosis. The treatment plan included a course of oral steroids and antihelminthic drugs, along with physiotherapy. In present case, the patient's condition significantly improved with conservative management. The present case illustrates the diagnostic challenges due to the vague clinical presentation and unfamiliarity of clinicians with present entity, making it difficult to diagnose when seen as an isolated cyst. The unique manifestations of muscular cysticercosis emphasise the importance of early detection and proper management.

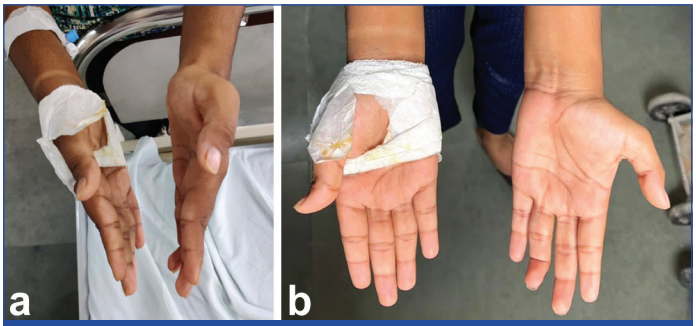
Keywords: Median nerve, Muscular cysticercosis, Nerve compression, *Taenia solium*

CASE REPORT

A 15-year-old girl presented to the Outpatient Department (OPD) of the Department of Paediatrics with a complaint of swelling over the anterior aspect of her left forearm since last eight months, which had worsened for the past four days. The swelling was gradually followed by an inability to fully extend the middle and ring fingers of her left hand since last six months. The swelling had an insidious onset and gradually increased in size. It was not associated with pain. The deformity worsened with an increase in the swelling of the forearm over the last four days. Five days and two days before admission, the patient had two spikes of fever. Each time it was undocumented but apparently low-grade and intermittent in nature, subsided with the patient taking Tablet Paracetamol 650 mg on her own, and lasted for 24-36 hours each time. There was no history of trauma, animal bite, headache, anorexia, weight loss, or abnormal body movements. There were no palpable swellings in any other part of the body. There was no history of contact with tuberculosis. She was a vegetarian by diet and was immunised for her age.

On examination, her vitals recorded were a heart rate of 92/min, respiratory rate of 22/min, saturation- 98% on room air, blood pressure of 100/72 mmHg, temperature of 98.2° F. Anthropometry was within normal limits with a weight of 51 kg (50^{th}-75^{th} percentile), height 157 cm (50^{th}- 75^{th} percentile), Body Mass Index (BMI)-20.6 (50^{th} percentile). On examination, there was no pallor, icterus, cyanosis, clubbing, or palpable lymphadenopathy. On local examination, the swelling was 3×2 cm in size. It was firm, round, non erythematous, non tender with normal surface temperature on the anterior/ventral aspect of the left forearm, approximately 4-5 cm away from the cubital fossa and 6 cm from the wrist, not extending to the dorsum of the forearm. The swelling was fixed to underlying structures but overlying skin was free. There was hyperextension at the metacarpophalangeal joints and flexion at the proximal and distal interphalangeal joints of the middle and ring fingers of the left hand, giving the hand the posture of an incomplete ulnar claw hand [Table/Fig-1a,b].

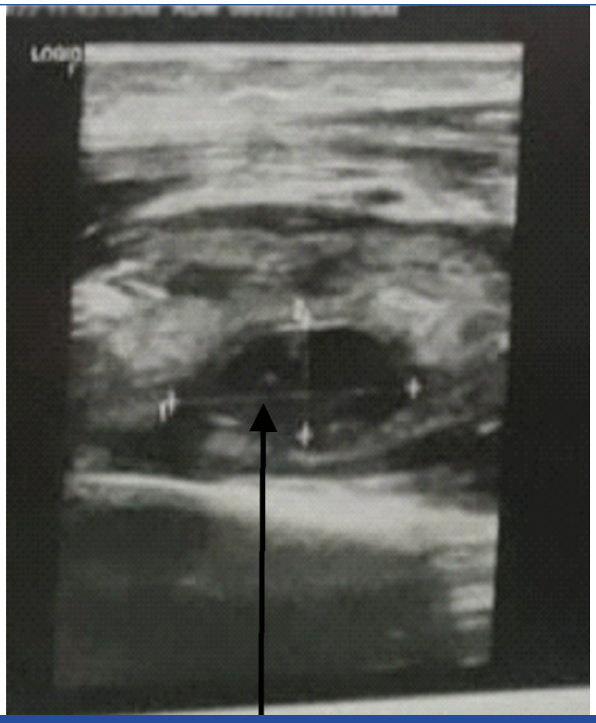
Systemic examination was unremarkable. Based on history and clinical evidence, a differential diagnosis of epidermoid cyst, soft tissue abscess (tubercular), haematoma, haemangioma, lipoma,



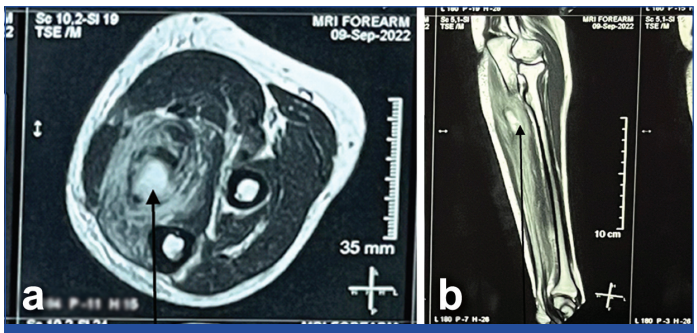
[Table/Fig-1]: a,b) Incomplete claw hand deformity of the left hand.

and cysticercosis was considered. Clinically, haematoma (no trauma/pain/erythema), haemangioma (absence of soft, spongy, bluish-red swelling), and a bacterial abscess (no fever, redness of overlying skin, and pain in the swelling) were ruled out. Tuberculosis work-up was done. The Mantoux test, Erythrocyte Sedimentation Rate (ESR), chest X-ray, sputum for Acid Fast Bacilli/Cartridge Based Nucleic Acid Amplification Test (AFB/CBNAAT) were found to be negative. Her laboratory investigations showed haemoglobin: 13 g/dL, total leucocyte count: 8700/mm^3, C-reactive Protein (CRP): 5.9 mg/L, ESR: 17 mm/hr. The peripheral smear showed a normocytic normochromic blood picture, and blood culture was sterile. Ultrasonography of the forearm was suggestive of a well-defined thin-walled cystic lesion with an echogenic nidus along the inner wall suggestive of scolex, suspicious for a *cysticercus* cyst [Table/Fig-2]. T1 Weighted (T1W) MRI of the forearm showed a hyperintense cystic lesion with perilesional oedema along with mass effect on the ulnar and median nerve, suggesting myocysticercosis [Table/Fig-3a,b].

Ocular examination, B-scan of both eyes, and MRI of the head were done prior to giving antihelminthics, which showed no evidence of intracranial/intraocular cysticercosis. She was given a course of oral prednisolone (2 mg/kg/day) for seven days. Albendazole 400 mg twice daily was given after the first seven days of steroids and given for 28 days. During the hospital stay, a physiotherapy opinion was taken, and she was advised to perform stretching exercises for 2-3

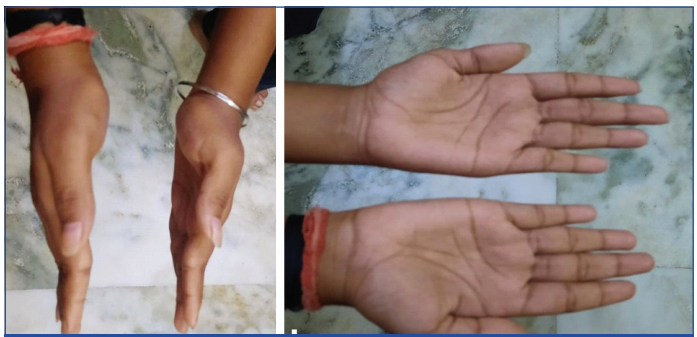


[Table/Fig-2]: Ultrasonography (USG) forearm showing a well-defined thin walled cystic lesion with echogenic nidus along the inner wall suggestive of scolex.



[Table/Fig-3]: a,b) T1W MRI forearm showing hyperintense cystic lesion with perilesional oedema.

minutes, followed by 10 minutes of passive finger movements in each session, to be done three times a day. She was advised to continue with follow-up visits every week once the swelling subsided. On follow-up, after a week, the swelling showed a reduction in size. Physiotherapy sessions were continued daily at home for a total of three months. She was advised to include strengthening exercises for both grip and pinch strength for 15 minutes thrice daily. On the 3rd-month follow-up, there was an improvement in the posture of the hand. The follow-up image of the hand [Table/Fig-4a,b].



[Table/Fig-4]: a,b) Follow-up image showing improvement in deformity of left hand.

DISCUSSION

Cysticercosis is the most widespread parasitic infection worldwide, with an estimated prevalence of over 50 million cases [1]. The infection occurs either directly by eating poorly cooked pork or consumption of vegetables contaminated with *Taenia solium* eggs [1-3]. India has a high prevalence of neurocysticercosis, with North India being affected more than South [2]. The main source of the spread of the disease is the faeco-oral route. The larvae enter the bloodstream, migrate, and form cysts in tissues, commonly found in striated muscles or the brain [2]. The most common organ to be affected is the central nervous system. Other major body parts involved are the liver, muscles, eyes, subcutaneous tissues, and rarely, the lungs and heart [1-3].

Muscle cysticercosis is generally not severe but can become complicated based on the location of the *cysticercus*. Entrapment neuropathy, although rare, is one of the most debilitating complications, as noted in present case. As the muscles are closely supplied by nerves, these children may present with entrapment neuropathies. The term is defined as pain and loss of function (motor and/or sensory) due to chronic compression of nerves [4]. Sometimes, an acute inflammatory response can lead to features of acute myositis, as suspected in present case [5].

The differential diagnosis for muscular cysticercosis includes various conditions such as lipomas, epidermoid cysts, dermoid cysts, granular cell tumours, tuberculous collections, and soft tissue cysts [1-4]. The condition is often misdiagnosed as entrapment neuropathy may present as mononeuropathy or polyneuropathy. In present case presented, it was polyneuropathy as both the ulnar and median nerves were involved, resulting in the development of an incomplete claw hand. The child presented with hyperextension of the fingers at the metacarpophalangeal joint and flexion at the interphalangeal joint. This deformity occurs due to the temporary mechanical pressure on the nerves. Functional recovery is usually complete once the pressure on the nerves is relieved [4].

A similar case was reported by Sharma SR et al., where a 38-year-old male patient presented with features of carpal tunnel syndrome due to compression of the median nerve within the carpal tunnel, caused by cysticercosis. The case resolved with conservative treatment [6]. Two other similar cases were reported by Kumar V et al., and Agarwal A et al., involving a 17-year-old female and a 26-year-old male, respectively. The first case was resolved with conservative treatment, while the latter required surgical excision due to the failure of symptom resolution after a course of conservative treatment [7,8].

Agarwal AK et al., reported a similar case of a 35-year-old female patient with cysticercosis of the Flexor Digitorum Profundus (FDP) muscle, which presented as localised swelling at the ulnar aspect of the right forearm with a claw hand deformity. The case resolved with conservative treatment [9]. Two other cases reported by Ranjeet N et al., and Yadav SK et al., involved a 23-year-old female and a six-year-old boy, respectively. Both cases presented as swelling of the hand over the thenar region in both cases [10,11].

Treatment for cysticercosis depends on the symptoms and the affected area. In cases of compression neuropathy, a conservative approach is often adopted, which includes using splints for limb positioning, physiotherapy, and administering drugs such as anti-helminthics and anti-inflammatory medications [12]. In present case, the patient experienced significant improvement with conservative management, involving a course of oral steroids and antihelminthic drugs. Preventive measures are also crucial in managing cysticercosis. These measures include ensuring thorough cooking of food to prevent infection. Additionally, early detection and complete removal of the worm are important in preventing further complications.

CONCLUSION(S)

It can be concluded that, although solitary intramuscular cysticercosis is rare and generally asymptomatic in presentation, it can occasionally lead to symptoms like swelling, pain, compression neuropathy, or compartment syndrome. It is important to consider the possibility of intramuscular cysticercosis, particularly in endemic regions, when a patient presents with a nodule or swelling on their

body. It should be a part of the differential diagnosis when evaluating children with entrapment neuropathies. Ultrasound should be considered as an initial investigation, and in doubtful cases, MRI or Fine Needle Aspiration Cytology (FNAC) could be confirmatory. Early identification is essential as well as helpful in avoiding surgery and promoting complete recovery.

REFERENCES

[1] Kumar HCK, Narayana PS, Kumar KJ. Isolated intramuscular cysticercosis in children: A case report. Turkiye Parazitol Derg. 2022;46(1):72-74.
[2] Prasad KN, Prasad A, Verma A, Singh AK. Human cysticercosis and Indian scenario: A review. J Biosci. 2008;33(4):571-82.
[3] Saugat KC, Neupane G, Regmi A, Shrestha S. Myocysticercosis as a rare cause of hand swelling involving thenar group of muscles: A case report. J Nepal Med Assoc. 2020;58(228):618.
[4] Felice KJ, Jones HR Jr. Pediatric ulnar mononeuropathy: Report of 21 electromyography-documented cases and review of the literature. J Child Neurol. 1996;11(2):116-20.
[5] Venkataraman S, Vijayan GP. Uncommon manifestation of human cysticercosis with muscular pseudohypertrophy. Trop Geogr Med. 1983;35(1):75-77.
[6] Sharma SR, Sharma N, Yeolekar ME. Carpal tunnel syndrome caused by cysticercosis. Indian J Plast Surg. 2010;43(2):210-12.
[7] Kumar V, Reyaz M, Gupta SK, Kumar P. A rare case report of solitary intramuscular cysticercosis of right forearm involving the extensor muscle group. Int Surg J. 2018;5:1595-97.
[8] Agarwal A, Garg C, Agarwal M. Myocysticercosis as a rare cause of hand swelling: A case report with review of literature. Int J Anat Radiol Surg. 2015;4(3):30-32.
[9] Agarwal AK, Mourya A, Bajpai J, Shukla S, Goel M. Cysticercosis in (ulnar half) flexor digitorum profundus muscle of forearm presenting clawhand-like deformity: A rare case report. Int J Adv Case Reports. 2016;3(9):413-16.
[10] Ranjeet N, Onta PR, Sapkota K, Wahegaonkar K, Thapa P, Thapa UJ. Myocysticercosis as a cause of hand swelling: A case report. Nepal Orthop Assoc J. 2020;6(1):42-45.
[11] Yadav SK, Marwah S, Bhukkal B, Singh R. Myocysticercosis as a rare cause of hand swelling involving thenar group of muscles: A rare case report. Int J Surg. 2019;3(1):79-80.
[12] Riju JJ, Shiva Kumar AM, Sashikala P. Cysticercosis of cheek: A case report. J Microbiol Pathol. 2018;2:109.

PARTICULARS OF CONTRIBUTORS:
1. Junior Resident, Department of Paediatrics, Faculty of Medical and Health Sciences, SGT Medical College and Hospital, SGT University, Gurugram, Haryana, India.
2. Professor, Department of Paediatrics, Faculty of Medical and Health Sciences, SGT Medical College and Hospital, SGT University, Gurugram, Haryana, India.
3. Assistant Professor, Department of Paediatrics, Faculty of Medical and Health Sciences, SGT Medical College and Hospital, SGT University, Gurugram, Haryana, India.
4. Professor and Head, Department of Paediatrics, Faculty of Medical and Health Sciences, SGT Medical College and Hospital, SGT University, Gurugram, Haryana, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Jyoti Gulati,
Junior Resident, Department of Paediatrics, Faculty of Medical and Health Sciences, SGT Medical College and Hospital, SGT University, Gurugram, Haryana, India.
E-mail: jyoti.gulati.94@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Aug 11, 2023
- Manual Googling: Oct 13, 2023
- iThenticate Software: Dec 18, 2023 (9%)

ETYMOLOGY: Author Origin

EMENDATIONS: 6

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Aug 09, 2023**
Date of Peer Review: **Oct 10, 2023**
Date of Acceptance: **Dec 21, 2023**
Date of Publishing: **Mar 01, 2024**