



Visceral Larva Migrans: A Rare Encounter by a Cytologist

Neeti Nagar^{1*}, Neha K. Madan¹, Richa Mittal¹, Pradeep Kumar Debata¹
and Sunil Ranga¹

¹Department of Pathology, VMMC and Safdarjung Hospital, New Delhi, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

ABSTRACT

VLM is a zoonotic disease caused by the migration of third-stage larvae of nematodes through the tissue of human viscera. Among various etiological agents such as Baylisascaris procyonis, Capillaria hepatica, Ascaris sum, and some Ancylostoma species, Toxocara is a major cause of VLM. Poor hygiene, contact with dogs and geophagia increases the risk of toxocariasis. Young adults and children who are in close contact with animals are at a higher risk. Here we present a case of 7 years male child presenting with fever, abdominal pain and vomiting. The clinical presentation, biochemical and radiological findings supported the diagnosis of VLM which was corroborated in the cytological examination. Here we report a rarest encounter of VLM in the cytology smear.

Keywords: VLM; FNAC.

ABBREVIATION

VLM : Visceral Larva Migrans
AEC : Absolute Eosinophil Count

Fig : Figure
FNAC : Fine Needle Aspiration Cytology
CECT : Contrast Enhanced Computed Tomography

*Corresponding author: E-mail: nagar.neeti27@gmail.com;

1. INTRODUCTION

Visceral larva migrans (VLM) was first described by Beaver and co-worker in 1952. It is primarily caused by infection with *Toxocara canis* (dog roundworm) but also, by *Toxocara cati* (cat roundworm) [1]. Others like *Baylisascaris procyonis*, *Capillaria hepatica*, *Ascaris sum*, and *Ancylostoma* species. The prevalence of infection or disease in humans is not known, although there is a strong predilection for the tropical countries and Southeast-Asia including India [1].

Humans are the accidental host which get infected by ingestion of infected raw meat or by viable ova that contaminate the soil where dogs defecate. Third stage larva get released into the intestine and from here they enter into liver by portal venous system. Since there are no specific cytological findings for VLM, correlation with serology and radiology aids in establishing the diagnosis in this rarest encounter of VLM in cytology.

2. CASE REPORT

7year old male child presented in the pediatric department of our tertiary hospital with the complaint of fever from the past 3months, abdominal pain from the past month and on and off vomiting. There was a significant history of contact with cattle. However, there was no

significant history of eating raw meat and no history of pica. There was no history of seizures, difficulty in breathing, diminished or loss of vision, diarrhoea or constipation. On systemic examination a huge firm and tender hepatomegaly was appreciated. Laboratory findings at the time of his presentation were leukocytosis (21.5×10^3 cu mm) and high eosinophilia (AEC= 7240 cu mm). Workup for viral markers were negative. Ultrasound showed multiple heteroechoic lesion with subcentimetric hypoechoic lesion. On CECT multiple conglomerate peripheral enhancing lesion throughout the liver parenchyma with periportal hypodensity and adjacent lymphadenopathy suggestive of visceral larva migrans with secondary cholangiolar abscess was seen Fig 1. In view of suspicion of helminthic infection hydatid serology was sent, which was equivocal and USG guided FNAC of liver was performed . Microscopic examination of cytological smears confirmed the presence of fragments of body wall of larval parasite against the background of eosinophils, neutrophils, and lymphocytes along with the clusters of normal benign hepatocytes, however no eosinophilic granulomas or charcot laden crystal were seen in the smear (Fig. 2,3).

So, on cytology diagnosis of parasitic cyst possibly VLM was suggested. Serology for the toxocara could not be performed because of the unavailability in and around the institute.

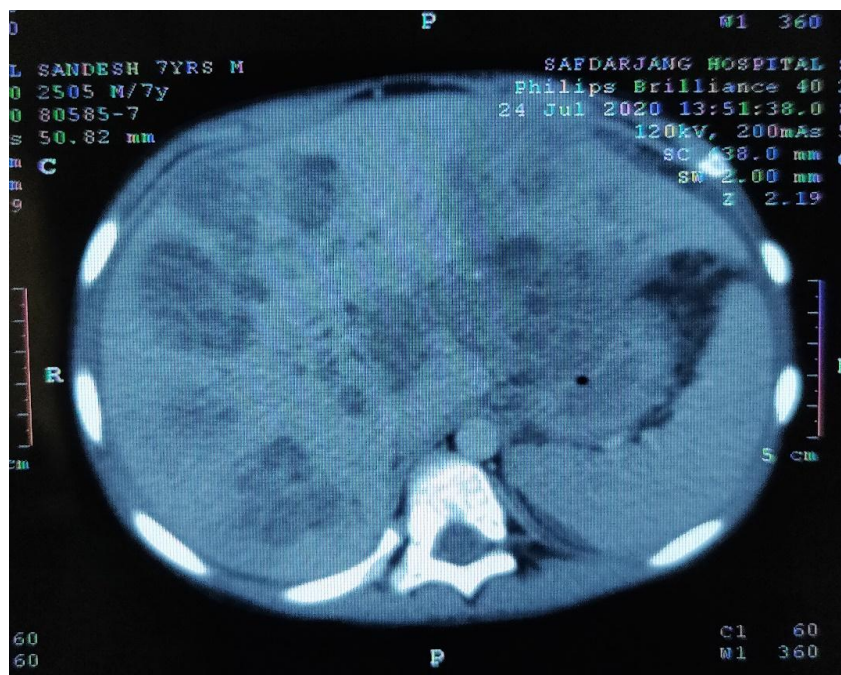


Fig. 1. CECT image show multiple conglomerate peripheral enhancing lesion throughout the liver parenchyma

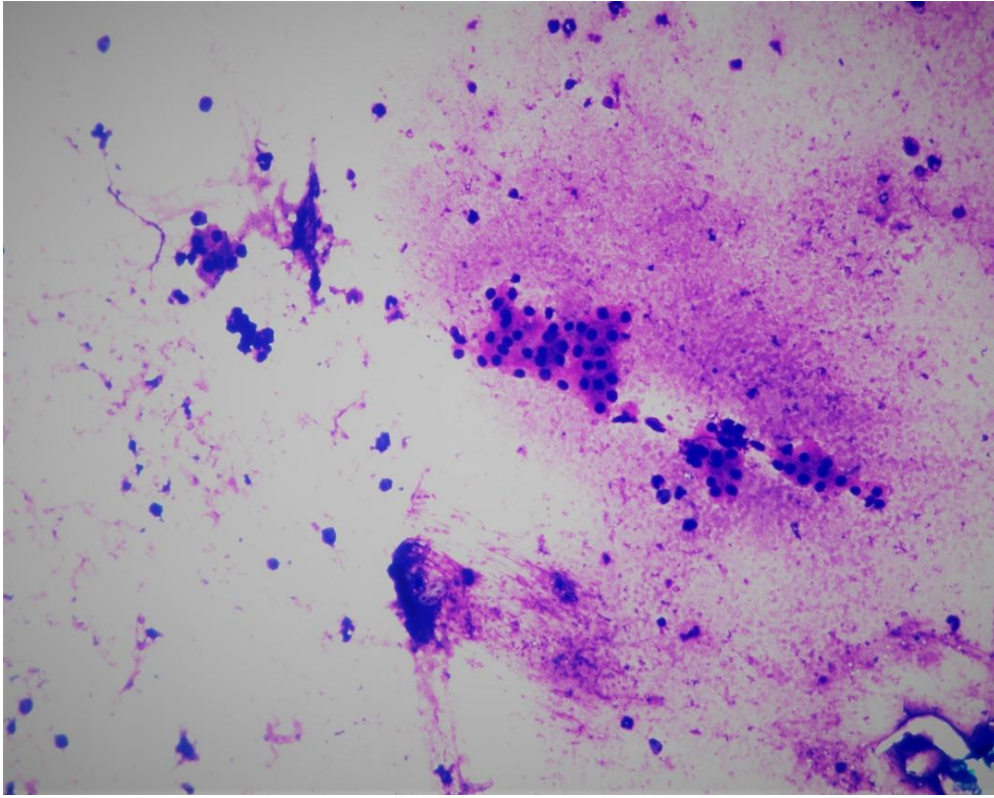


Fig. 2. Giemsa stained smears showing clusters of benign hepatocyte with background inflammation (10x)

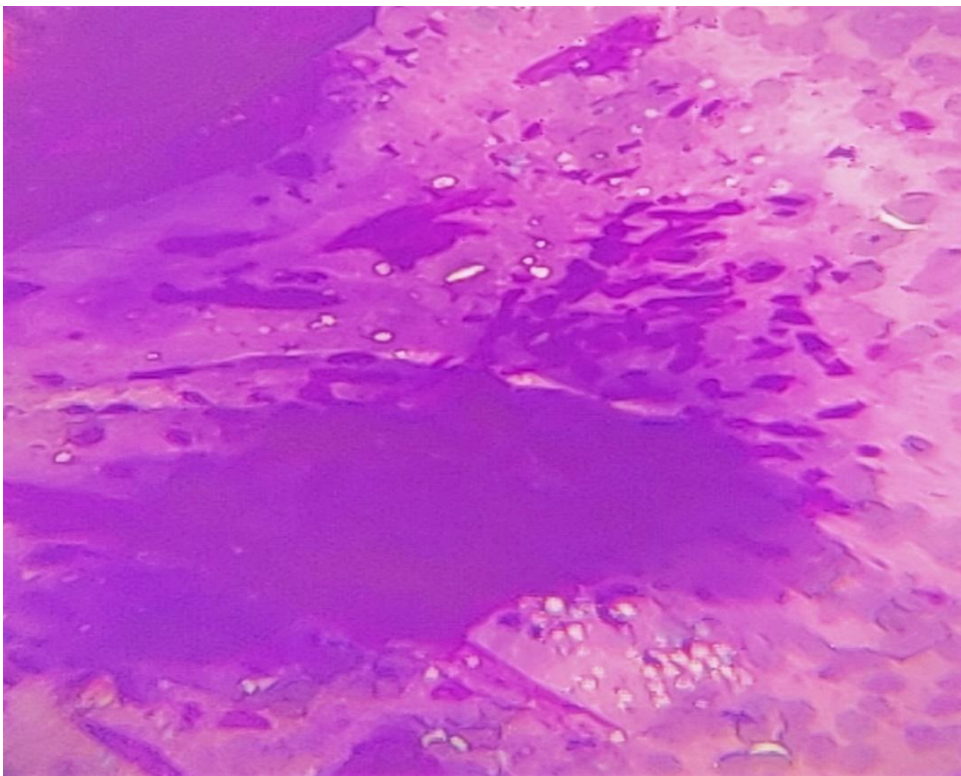


Fig. 3. Giemsa stained smears shows body wall of larval parasite (40X)

3. DISCUSSION

VLM is most commonly caused by *Toxocara canis*. It is usually an asymptomatic or vaguely symptomatic condition, which is caused by migrating larvae of *Toxocara* and other previously enumerated species like *Baylisascaris procyonis*, *Capillaria hepatica*, *Ascaris sum*, and some *Ancylostoma*.

The rate of infection is higher in developing countries, but highly under reported due to difficulties in finding the parasites in the tissues and due to unavailability and lack of utilization of the available diagnostic methods, combined with a low index of suspicion are probably important underlying factors [2].

Humans are the accidental host and get infected by the ingestion of uncooked bovine meat or by feco-oral contamination. It mostly occurs in children younger than 6 years, frequently after ingestion of contaminated soil [3,4]. Ingested eggs in the meat hatch into the larval stage in the small intestine and migrate to the liver, lung, eye etc. Among the visceral organs, the liver is the most commonly affected due to the portal venous drainage [5]. Manifestations depends on the number of infective eggs, duration of infection, organ affected and the host immune response [6]. Fever, hepatomegaly, splenomegaly and eosinophilia are the most common presentation [7]., which is same as in our case in which patient presents with fever, abdominal pain, on and off vomiting and hepatomegaly as well as peripheral eosinophilia. Taylor et al reported abdominal pain as one of the most common symptoms specially in children with high titres [8].

Leukocytosis with eosinophilia is the commonest laboratory findings of VLM. Other findings are hypergammaglobulinemia and elevated isohemagglutinin titers to A and B blood group antigens, which are caused by the hosts immune response to cross-reacting antigens on the surface of *T. canis* or *T. cati* larvae. Ultrasonography shows multiple hypoechoic lesion and on CECT shows multiple conglomerate of illdefined oval to round cystic lesions which are consistent with our case findings. Radiology findings are suggestive, but not characteristic of VLM and need laboratory parameters eg serology, complete blood count [9,10,11]. Although cytology or biopsy from the lesion is gold standard [12,13]. Even after extensive search we could not find any definitive

cytological description of VLM. Usual findings are eosinophils, charcot laden crystals, epithelioid cell granulomas against the mixed proteinaceous background, all these features are suggestive of parasitic infection.

Treatment depends on the type and severity of symptoms and also on site involved. Anti-helminthics like albendazole, mebendazole, thiabendazole etc are generally used according to body weight of the patient. Recommended dose is 15 mg/kg bodyweight for 5 days. Second line of drug which can be used is Ivermectin. Our case was treated with steroids, albendazole and ivermectin.

4. CONCLUSION

In developing countries rate of infection is higher, but it is highly under reported due to overlapping symptomology with other parasitic infections, difficulty in finding the parasites in the tissues and due to unavailability and lack of utilization of the available diagnostic methods. This study reveals that the presence of absolute eosinophilia along with conglomerate of cystic lesions in the liver on CECT should raise the suspicion of visceral larva migrans. Which is further confirmed by FNAC/ biopsy which is gold standard for the same. To our knowledge this is one of the very few if any cases reported of this kind on cytology.

CONSENT

As per international standard or university standard, patients written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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