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# HEPATIC VISCERAL LARVA MIGRANS, AN UNCOMMON DIAGNOSTIC ENTITY, HOW TO OVERCOME THE DIAGNOSTIC CONUNDRUM- A CASE REPORT

**Radio-Diagnosis**

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## ABSTRACT

**Background:** Visceral larve migran (VLM) is the systemic host inflammatory response of the nematods like taxacara canis. It is not a rare entity but due to non-specific radiological features establishment of diagnosis is challenging. The condition is referred to as visceral larva migrans because the lesions move slowly. On imaging appear as single or conglomerated poorly defined lesions with no significant enhancement on the contrast study. Imaging features are mimicking the diagnosis of the metastasis, multifocal HCC and other granulomatous disease. We are presenting the biopsy proven case of visceral larve migran and discussing the key features to establish the diagnosis with confidence. **Case Presentation-** A 48-year-old female presented with epigastric pain radiating to the back for three weeks, accompanied by fever in the first week. Clinical examination revealed no jaundice or pruritus. Lab tests showed marked eosinophilia (42.9%) but normal liver and renal function. Imaging (USG, CT, MRI) revealed multiple hypodense liver lesions along portal vein branches. Liver biopsy confirmed granulomatous inflammation with eosinophils and Charcot-Leyden crystals, indicating visceral larva migrans (VLM). She was treated with albendazole for three weeks, with plans to extend based on clinical response. Symptoms improved after two weeks, with follow-up imaging scheduled in three months. **Conclusion-** Hepatic VLM diagnosis is challenging due to nonspecific imaging; eosinophilia and biopsy confirmation are key for timely management.

## KEYWORDS

## INTRODUCTION

Visceral larva migrans is a not a rare problem in underdeveloped nations, but it is difficult to diagnose because of vague imaging and laboratory results. It is one of the clinical syndromes of human toxocariasis due to systemic host inflammatory response.(1) No characteristic appearance on the imaging but Few indicative signs are noted on imaging like single or complex discrete and clustered lesions that extend from the liver edge along the portal vein branches reaches upto the hilum without any enhancement.(2) Eosinophilia and serological toxocara antigene test (ELISA) are also supporting the diagnosis of the VLM but biopsy is gold standard.(3)Early detection is critical for successful therapy and the prevention of complications such as pseudoaneurysm and thrombosis.(4, 5)

## CASE REPORT

**Patient Presentation-**A 48-year female presented in our hospital with complaints of epigastric pain since 3 weeks radiating to back and fever spikes especially in the first week. On clinical examination no jaundice or pruritus and history of clay-coloured stools, vomiting or weight loss. The fever resolved by course of analgesic in 3 days but the pain was persistent. Haematological evaluation shows no anaemia or leucocytosis but differential eosinophil count revealed marked eosinophilia (42.9% against a normal range of 0.5-5%). Biochemical evaluation, including liver and renal function tests and electrolytes was within normal limits. Abdominal ultrasonography revealed poorly marginated, hypoechoic lesions in both lobe of liver predominantly in the segment IV, V and VIII. (Figure 1) Lesions are difficult to characterize on the USG and decision was made to do triphasic contrast CT with Liver protocol to further characterize the lesions. In view of suspicion of malignancy on USG, tumour markers like Alpha fetoprotein (AFP) carcinoembryonic antigen, CA 19-9 and CA-125, were evaluated which came out to be within normal limits. In view of suspicion of the tuberculosis Mantoux test was performed which shows negative result. Abdominal contrast enhanced triple phase computed tomography (CT) revealed multiple well defined and ill-defined oval and rounded variable sized conglomerate hypodensities in caudate lobe, segment IV, V and VIII from periphery to hilum. (Figure 2) Lesions were well visualised on venous phase and appeared hypodense fluid density lesions and were seen as extending from surface to hilum ; predominantly along the portal vein branches. No significant enhancement was seen in the arterial phase. Distribution of the lesions follow the specific pattern from surface to hilum and predominantly along the portal vein branches. Hepatic veins and portal vein are normal in calibre and patent. Multiple enlarged lymph nodes are noted in the porta, peripancreatic, paraaortic, aortocaval and mesenteric region largest measure 11mm in short axis diameter. MRI showed hepatic lesions hypointense on T1-weighted (T1W) images and hyperintense on T2-weighted (T2W) images with restricted diffusion on diffusion-weighted (DW) images. (Figure 3) In view of eosinophilia, clinical features and indicative radiological findings diagnosis of VLM was made.

To further confirm our diagnosis Liver biopsy was performed under USG guidance. Multiple linear cores of biopsy show large epithelioid cell granulomas with central necrosis admixed with nuclear debris, many eosinophils and charcot layden crystals. The portal tracts show mild inflammation comprising of lymphocyte, eosinophils and neutrophils along the sinusoidal dilatation. Overall findings are suggestive of a granulomatous inflammation, likely associated with parasitic aetiology.

### Management and Outcome

In charge doctor started albandazole medication for 3 weeks and planning to extend for one more week depending on the clinical response and blood investigations findings . Two weeks follow up show reduction in the clinical symptoms. Follow up imaging planned after 3 months because imaging findings not truly reflect the clinical resolution of the disease.

## DISCUSSION

VLM refers to the migration of nematode larvae (second stage) into human visceral tissue.(6) Infection occurs when humans consume

infective eggs from the soil or encapsulated larvae from the raw tissues of animal hosts. (7) The larvae are released into the intestine, where they burrow into the wall before travelling to the liver via the portal vein and further involvement of the organs. These migratory larvae trigger an eosinophilic infiltration and host inflammatory response, causing tissue damage and a wide range of clinical symptoms. There may be pulmonary, neurological, dermatological, hepatic, lymphatic, cardiac, rheumatological manifestations of the disease but liver and lung manifestation are common.(8, 9)Abscesses or granulomas are formed by the larvae, whether alive or dead in nature. The mechanism of liver infiltration is thought to be an allergic reaction to the larvae.

VLM lacks a distinguishing imaging feature, but some imaging features are suggestive and frequently necessitate correlation with laboratory and pathology data.

On USG lesions appear hypoechoic in nature and difficult to establish the diagnosis of the VLM. Contrast CT is more informative to characterise the lesions. Multiple oval to round complex discrete and clustered hypodense lesions that extend from the liver edge to the hilum along the portal vein (PV) branches are widely dispersed and packed. In large complex lesion, linear tracts are occasionally seen, which could be a highly valuable imaging feature that suggests suspicion of VLM. CECT is also critical for assessing and plan treatment strategy for disease-related complications such as portal vein thrombosis, hepatic vein thrombosis, rupture, pseudoaneurysm, and biliary dilatation.(10) Various vascular complications are due to the adjacent vessel damage by cytotoxic eosinophil-derived proteins. Due to the underlying infectious process and systemic dissemination of the larvae from the bowel to the liver, several enlarged lymph nodes are detected, as seen in our cases.

On MRI, most of the lesions shows hypointense signal on T1W images and hyperintense lesions on T2W images. T1 hyperintense ring around the abscess cavity is also noted in some case which is important radiological findings. This ring reveals a layer of granulation tissue and consequently the inflammatory nature of the disease. As demonstrated in this case, linear tracts are occasionally seen, which could be a highly valuable imaging feature that suggests suspicion of VLM. On diffusion images abscess shows restriction as noted in our case. Super-paramagnetic iron oxide-enhanced (SPIO) magnetic resonance imaging is useful to differentiate the VLM to metastasis.(11) If lesions may change in appearance and location on subsequent imaging highly suggestive of larval migration.

On the basis of imaging appearance possibility of metastatic lesion and satellite lesions of hepatocellular carcinoma (HCC) keep in the differential diagnosis. While metastases/HCC have well-defined edges, are spherical, and exhibit little attenuation, VLM nodules have fuzzy edges, are non-spherical, and exhibit some attenuation. Almost primarily in metastases, equilibrium phase ring enhancement is observed, but less frequently in VLM. (12)While VLM nodules are evident in the portal phase, metastatic lesions are more evident in the arterial phase.(13) VLM lesions and the majority of HCC have been observed to enhance in the arterial phase of the liver, but there has been no evidence of washout in the steady-state or latent phase for VLM, helping them to be distinguished from HCC nodules.

Eosinophilia is a critical finding in VLM patients to confirm the diagnosis but not specific findings and also seen in other malignancies such as lymphoma, leukaemia, and carcinoma.(14) In some case new array of investigation like ELISA test with immunoglobulin levels are also beneficial to make the diagnosis with confidence.(8)

The gold standard of diagnosis of VLM is histopathology and biopsy examination. The presence of granulomas, Charcot–Leyden crystals and eosinophilic abscesses are seen.

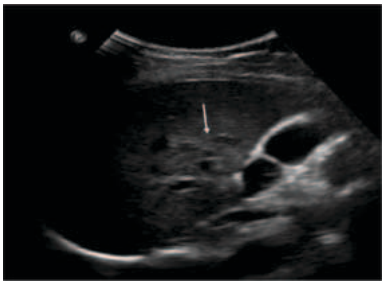

**Fig 1 Abdominal Ultrasonography Revealed Poorly Marginated, Hypoechoic Lesions (White Arrow)**

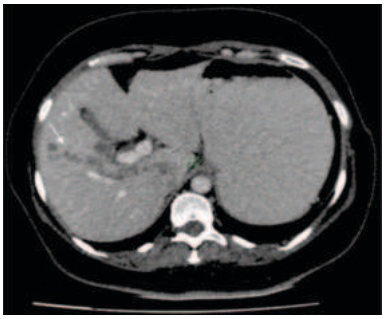

**Fig 2a: Contrast Enhanced Abdomen CT in Portal Phase Axial Section Showing Multiple Well Defined and ill Defined Hypodense Lesions from the Periphery to the Hilum**

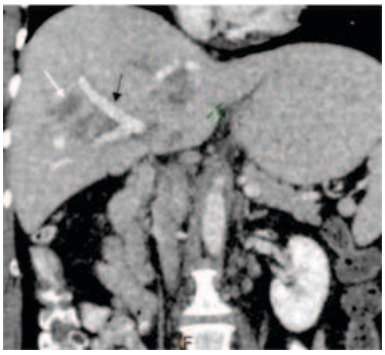

**Fig 2b: Contrast Enhanced Abdomen CT in Portal Phase Coronal Section Showing Multiple Well Defined and ill Defined Hypodense Lesions (White Arrow) from the Periphery to the Hilum Along The Portal Vein (Black Arrow)**

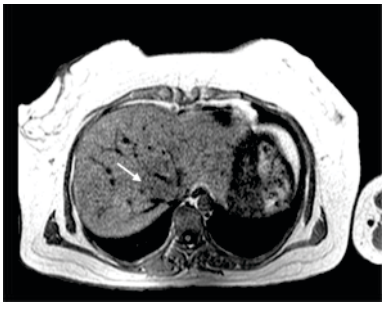

**Fig 3a: MRI T1W Image Showing Multiple Well Defined and ill Defined Hypointense Lesions (white Arrow)**

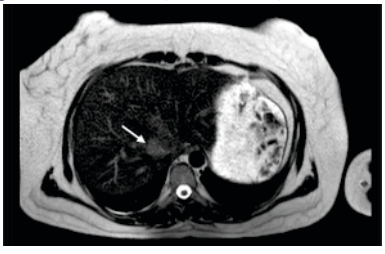

**Fig 3b: MRI T2W Image Showing Multiple Well Defined and ill Defined Hyperintense Lesions (white Arrow)**

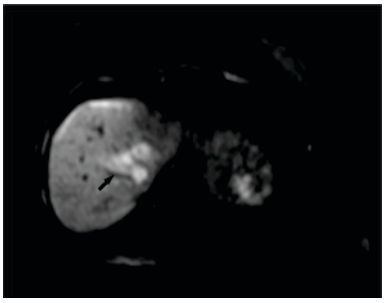

**Fig 3c: MRI Diffusion Imaging Showing Restriction in the Liver Lesions**

## CONCLUSION

Hepatic visceral larva migrans is a not a very rare parasitic infection but diagnosis of the disease is rare because of its nonspecific imaging features. This case report emphasizes the importance of indicative imaging findings like hypodense isolated or conglomerated nodules with fuzzy edges along the periportal distribution of lesions and conspicuity on portal venous phase without any significant enhancement and washout. Findings of eosinophilia in appropriate clinical and imaging setting is very important marker for diagnosis however most of the cases needs biopsy confirmation before planning of the treatment. Increasing awareness of Hepatic VLM among radiologists, pathologist and treating doctor is crucial for timely diagnosis, management and prevention of the complications related to this unique disease.

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