

Real-time high-frequency colour Doppler ultrasound detection of cutaneous *Dermatobia hominis* myiasis

Editor

The infestation of the skin by the *Dermatobia hominis* larva has been described as common in Central and South America.¹ The patient's history of travel to endemic regions can give a clue to the diagnosis.² However, the identification of the larva can be confirmed by clinical observation on surgery or by fine-needle aspiration cytology of the lesion.³

The recent development of multichanneled colour Doppler ultrasound machines with variable and high-frequency probes (upper range 15–22 MHz) have allowed the observation of the skin layers and deeper structures with high resolution.⁴ Ultrasound has been used for diagnosing the soft tissue presence of *Dermatobia hominis* larvae in case reports using lower frequency probes (≤ 10 MHz).^{5–8} However, colour Doppler ultrasound machines with ≥ 15 MHz probes seem to show images with better definition as well as demonstrate regional vascularity in real time.^{4,9}

We studied the colour Doppler ultrasound images and videos of nine clinically and surgically confirmed lesions of *Dermatobia hominis* cutaneous larva infestation present in eight patients (5 male/3 female; age range: 6–82 years; mean age: 37 years, SD 25). The equipment used for the study was: My Lab 25 Gold (Esaote, Genoa, Italy), HDI 5000 and IU 22 (Philips Medical Systems, Bothell, WA, USA), Aplio (Toshiba Medical Systems, Tokyo, Japan) and Logic E9 XD Clear (General Electric Medical Systems, Milwaukee, WI, USA). The probes varied in their upper frequencies between 15 and 18 MHz.

This study was approved by the Institutional Review Board of Clinica Servet, who waived the informed consent for the publication of the non-identifiable sonographic images or videos. However, a signed informed consent for the publication of the clinical and surgical images was requested and obtained from the patients.

The sonographic diagnosis of the presence of the larva was assessed using the following criteria: oval-shaped structure with hypoechoic rim and hyperechoic centre, spontaneous movement and peripheral blood flow.

Seven lesions were sonographically positive for all the ultrasound criteria and the presence of the larva was clinically and surgically confirmed. In two cases, there was an oval-shaped hypoechoic and hypovascular structure with some inner echoic lines that surgically corresponded to a cavity with debris and/or remains of the skeleton of the larva. In these cases, the larvae had been extracted before the ultrasound examination, by the

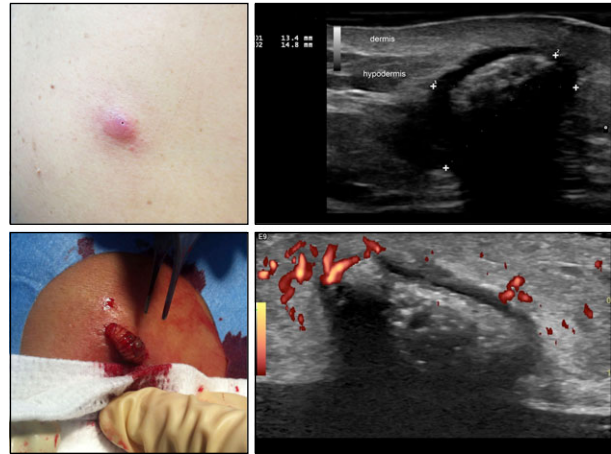


Figure 1 Clinical, ultrasound (grey scale and colour Doppler) and surgical images of the *Dermatobia hominis* larva parasitic infection.

patient or a relative, and the ultrasound examination was able to confirm the presence or absence of the living larva within the cavity.

The lesions involved the hypodermis and protruded into the dermis and additionally showed an increased echogenicity of the surrounding hypodermis most probably due to oedema and inflammation. The scalp, arm and forearm were the most common anatomical regions affected by the parasitic infection (two lesions for each location). In all positive cases, there was one larva per lesion. Six of the cases showed a variable intensity posterior acoustic shadowing artifact.

The spontaneous movement of the larva was detected in the positive lesions, and consisted of slight contractions of the hypoechoic rim and prominent movements within the hyperechoic content of the structure. In two cases, the colour Doppler ultrasound examination showed an artifact with colour signals within the larva during their spontaneous movements (Fig. 1; Videos S1 and S2).

In conclusion, the detection of the infestation by *Dermatobia hominis* myiasis including its spontaneous structural movements can be reliably performed on colour Doppler ultrasound in real time and with high definition.

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Supporting information

Additional Supporting Information may be found in the online version of this article:

Supplemental Video 1. Grey scale ultrasound video showing the spontaneous movement of the larva.

Supplemental Video 2. Power Doppler ultrasound demonstrates increased vascularity (in color) in the periphery of the larva.

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The Baykal phenomenon: large congenital melanocytic nevi involving the breast tend to spare the nipple and areola

Editor

Recently, a most interesting report on large melanocytic nevi (LCMNs) was published by Can Baykal and co-workers from Istanbul.¹ In eight individuals affected with a LCMN involving the breast, they noted that the nipple and areola were spared, giving rise to the appearance of circular light-colored islands surrounded by the dark-brown or black color of the nevus. The authors claimed that they had discovered a formerly undescribed feature of LCMN. The present study was undertaken to challenge this statement.

For this purpose, the articles as found in PubMed during the years 2000–2015 under the term ‘giant nevus’ were screened for cases of breast involvement. Surprisingly, it was rather easy to detect 18 previous reports that documented, inadvertently, a similar sparing of the nipple and areola. In none of these reports, the sparing phenomenon was mentioned with one single word. Figure 1 shows photographs of three typical cases.^{2–4} Hence, there can be no doubt that Baykal *et al.*¹ have described a new characteristic aspect of LCMN. For this feature, I propose the term ‘Baykal phenomenon’.

From Table 1, we can conclude that the Baykal phenomenon is a rather frequently occurring feature of LCMNs involving the breast. Moreover, the following inferences can be made.

- 1 The sparing phenomenon occurs in both sexes. In the present series, the male:female ratio was 11 : 6, whereas it was 2 : 6 in the group observed by Baykal *et al.*¹
- 2 The sparing phenomenon remains unchanged during adolescence^{3,9,10} and adulthood.^{4,18}
- 3 When the LCMN involves both breasts, the Baykal phenomenon may be noted either on both breasts^{2,7,8,10,11,13,14} or on one breast only.^{5,6,9}

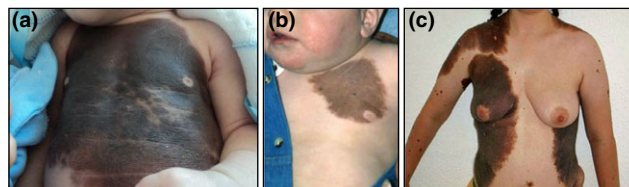


Figure 1 Sparing of nipple and areola as documented inadvertently in three cases of large congenital melanocytic nevi involving the breast. (a) 3-week-old boy.² (Reproduced under Creative Commons Attribution License). (b) 6-month-old boy.³ (Reprinted with permission from Wolters Kluwer Health, Inc., USA). (c) 29-year-old woman.⁴ (Reprinted under Creation Commons Attribution License).