



Genital and Breast Myiasis: Case Series

Elediane Garbeloto, Bárbara de Souza Trindade, Fabíola Alves Canal, and Antônio Chambô Filho

Department of Gynecology, Superior School of Science, Santa Casa de Misericórdia, Vitória, ES, Brazil

Abstract

Myiasis is an infestation by fly larvae in organs and tissues of humans and other vertebrates in which they feed and develop as parasites. This paper describes a series of clinical cases of genital and breast myiasis in patients acquiring treatment at the Department of Obstetrics and Gynecology of the *Santa Casa de Misericórdia* in Vitória, Espírito Santo, Brazil. Cases comprise 5 women aged 18-70 years. The treatment has been performed as the service protocol. Socio-epidemiological profile of the patients, clinical presentations, treatment and outcome of the treatment of myiasis were described.

Keywords: genital myiasis; breast myiasis; treatment

Introduction

Myiasis is an infestation by fly larvae in organs and tissues of humans and other vertebrates in which they feed and develop as parasites. Various types of flies cause diseases in animals and humans [1]. In Brazil, these include *Cochliomyia hominivorax* (Coquerel), *Cochliomyia macellaria* (F.) and *Dermatobia hominis* (L.), all of which may cause parasitic myiasis [2-4].

The transformations brought about by humans in previously uninhabited environments have resulted in the adaptation and proliferation of flies at these sites. Changes that have caused the greatest impact include the widespread practice of breeding domestic animals such as cattle, horses and pigs [1].

Corresponding author:

Elediane Garbeloto
55, Herwan Modenese Vanderley St. Apt 605,
Jardim Camburi.
29090-640 Vitória, ES, Brazil
Telephone: 55 27 9287-9630
Email: elediane.garbeloto@gmail.com

Human myiasis is one of the most common diseases in tropical regions of the world and is most prevalent in inhabitants of rural areas [5,6]. In the majority of cases, this disease affects the exposed areas of the body of immunocompromised individuals, individuals with poor personal hygiene, people with little schooling, psychiatric patients, alcoholics and drug addicts [5,7-9]. The importance of this disease in terms of public health is obvious since there is a strong social connotation associated with this type of infestation that is closely linked to poverty and a lack of primary healthcare. In recent years, there have been reports of cases of infestations affecting unusual areas of the human body, particularly cases of vulvar myiasis. The basis of the treatment lies on the mechanical removal of the larvae; recently, the use of ivermectin has been suggested [8].

The objective of the authors in reporting these five cases of genital and breast myiasis was to describe the socio-epidemiological profile of the patients and the clinical guidelines for the treatment of myiasis established at the Department of Obstetrics and Gynecology of the *Santa Casa de*

Misericórdia in Vitória, Espírito Santo, Brazil. The maggots must be sent for species identification. The report of the present cases was approved by the institute's internal review board under approval number 139.677. The patients referred to in this report were treated between September 2011 and September 2012 in accordance with the clinical protocol described here.

Case #1

A 18-year-old woman, homeless crack addict, was admitted with complaints of intense pain in the vulvar region. She was disoriented and extremely agitated. She reported that she had been raped five days previously and had been wounded in the vulva with the previous three days; she had begun to feel something moving inside the lesion.

Clinical examination: Presence of an 8 cm ulcerated lesion on the left labia majora containing numerous live, yellowish maggots. The anatomical deformity with a pattern of tunnels may be noted in Figure 1. Presence of purulent, foul-smelling secretion; inguinal lymph nodes not palpable. Laboratory tests showed VDRL 1:32 with no other abnormalities.



Fig 1: Initial appearance of an ulcerated lesion on the patient's left labia majora. Note the presence of numerous fly larvae.



Fig 2: Lesion following oral administration of ivermectin and mechanical removal of the larvae.

Treatment: She was administered a dose of 12 mg ivermectin. Twenty-four hours post treatment, a few live larvae were found. An additional 6 mg dose of ivermectin was then administered. Forty-eight hours after the initial treatment, only four maggots were found (Figure 2). The larvae were removed mechanically in the surgical theater and they were identified as belonging to the species *Cochliomyia hominivorax*. The lesions were debrided and histopathology revealed an ulcerated, fibropurulent inflammatory process with vasculitis and recent formation of thrombi. This patient was given an initial dose of penicillin G Benzathine 2,400,000 IU as prophylaxis for venereal diseases and antibiotic therapy for secondary infection. However, the patient became lost to follow-up prior to completing treatment.

Case #2

A retired woman 70 years of age, living in a rural area of the state of Espírito Santo, Brazil, complained of intense pain and a sensation that "something was moving around" in her vulva. These symptoms had been present for about a week. She reported having fallen on dry branches, consequently receiving a cut on the vulvar region.



Fig 3: Ulcerated lesion on the patient's right labia majora completely filled with fly larvae.



Fig 4: Nodular lesion on the labia majora. Presence of a single larva inside each lesion on the right and left labia majora.

Clinical examination: Examination revealed a 3 cm long, well-defined lesion on the right labia majora, containing numerous live small, white fly larvae. Localized swelling and hyperemia, with a fetid smell (Figure 3) were observed. Laboratory tests were normal. The maggots were identified as belonging to the species *Cochliomyia hominivorax*.

Treatment: A dose 12 mg of ivermectin was given and 48 hours later, no live larvae were found. The larvae were then removed mechanically in the surgical theater.

Case #3

A 30-year old lawyer reported the appearance of a furuncle on her vulva upon returning from a camping trip to a farm, about 40 days prior to consultation. She complained of a stabbing pain and secretion.

Clinical examination: Inspection revealed a nodular lesion of approximately 2.5 cm on her left labia majora and a 1.5 cm lesion on the right labium majus, with mild hyperemia, swelling and the presence of a central orifice (Figure 4).

Treatment: An infiltration of local anesthetic (1% lidocaine) was made and two small maggots

(5 mm) were removed, one of each lesion, using a sterile instrument. The area was cleaned with 0.9% saline solution and an antibiotic ointment was applied. The maggots were identified as species *Dermatobia hominis*.

Case #4

A 60-year old housewife, resident of Serra, Espírito Santo, had an advanced malignant neoplasia on her right breast. She was complaining of a burning pain at the site of the lesion that had intensified over the past two weeks. Her first session of chemotherapy had already been scheduled.

Clinical examination: The patient's personal hygiene was poor. There was an ulcerated lesion of 7 cm in size with areas of necrosis around the borders, situated on the upper, external quadrant of her right breast. Numerous larvae were found inside the tissue (Figure 5). The maggots were identified as belonging to the genus *Sarcophaga*. There was a fetid smell. The right axillary lymph node was palpable and had little mobility.

Treatment: She was administered 12 mg ivermectin orally. An additional 12 mg dose of ivermectin was required 24 hours after the initial dose since numerous live larvae were found at the



Fig 5: Appearance of the lesion following oral administration of ivermectin and mechanical removal of the larvae.

site, probably due to the area of necrotic tissue. This patient underwent superficial surgical debridement and was referred to the oncology clinic.

Case #5

A 68-year old woman with Alzheimer's disease who had been living in a shelter for less than a month was referred to the institute for evaluation of a vaginal discharge that staff had noticed in her diapers since her admission.

Clinical examination: The patient's personal hygiene was poor, particularly with respect to the genital area. Specular examination revealed numerous small, live, yellowish larvae in the vaginal canal and a malodorous discharge. There were no secondary lesions or devitalized tissue (Figure 6). The maggots were identified as belonging to the species *Cochliomyia hominivorax*.

Treatment: Because the vaginal mucosa was intact, permitting visualization of the entire vaginal canal, treatment did not include the use of ivermectin. The larvae were removed mechanically and the vaginal canal was cleaned using PVP-I (povidone-iodine), with no more larvae being found at the end of the procedure. The team of caregivers at the shelter was instructed on the precautions that should be taken to care for the patient's personal hygiene and her underwear.



Fig 6: Ulcerated lesion of the vaginal introitus, filled with fly larvae.

Discussion

Myiasis, is an infestation by fly larvae in organs and tissues of humans and other vertebrates in which they feed and develop as parasites [5,10]. It can be classified as primary, secondary or accidental [5,6,9]. Primary infestations, also referred as furuncular myiasis and in Brazil as "berne", are characterized by nodular lesions with a central orifice from which a serous secretion drains. The lesion is painful and the principal complaint is a stinging sensation resulting from the movements of the larvae, which may be single or multiple. In the secondary form, the principal characteristic is the involvement of necrotic tissue present in exposed skin and mucosal ulcers. In this type of myiasis, various larvae may be seen moving on the surface of the ulceration interspersed by a seropurulent secretion and dead tissue. Accidental myiasis may follow the ingestion of food contaminated with fly larvae or eggs and then the larvae infest gastrointestinal tract [2-4]. Myiasis can also be classified in accordance with the region of the body affected: the skin, internal organs or cavities [5].

Standard treatment of primary myiasis was restricted to simple mechanical removal of the larvae after closing the orifice to suffocate them. Substances such as Vaseline ointment, pig fat,

adhesive bandages, olive oil, ether and cosmetics have been commonly used, albeit with conflicting results [8,11-13]. There is also a report of using 1% lidocaine infiltration together with obstructing the orifice with polymyxin B ointment for the treatment of primary myiasis [14]. Surgery is used only in complicated cases involving several tissue levels or cavities [9,12]. Nevertheless, ivermectin has shown to be an effective drug for treating these infestations.

Currently, ivermectin is indicated for more severe cases, including secondary myiasis, and in 1993 it was reported to be safe for the treatment of other parasitic infections in humans, principally with respect to liver and kidney function [8,15].

Ivermectin is a broad-spectrum, macrolide antibiotic produced by fermenting *Streptomyces avermitilis*. It is rapidly absorbed and the concentrations reached are high [11]. It acts by immobilizing the parasite, inducing muscle paralysis [5]. The paralysis is mediated through activation of the glutamate-gated chloride channels, which are not present in mammals, being found exclusively in the nerve and muscle tissues of invertebrates. It should also be noted that the principal peripheral neurotransmitter in mammals, acetylcholine, is not affected, making this antibiotic safe at therapeutic doses [8]. Recent studies have shown good tolerance at doses of up to 400 µg/kg (0.4 mg/kg) [15].

Recently, Saldarriaga et al. [16] described the first case of secondary uterine myiasis in a genital prolapse treated with oral ivermectin (0.6% drops - 1 drop/kg in a patient with a BMI of 31) and topical ivermectin, with the dead larvae being removed mechanically afterward. The lesion appears necrosis and it was infested by living larvae, *Sarcophagidae* vs *Calliphoridae* families.

As mentioned previously, the patients in this present report were subjected to a treatment protocol. The principal target of treatment in the case of myiasis is to remove the larvae and prevent a secondary bacterial infection. Therefore, guideline protocol with some modifications is described as follow:

Clinical evaluation of the lesion, the triggering

factor, the patient's social and epidemiological history, and the need for tetanus prophylaxis.

Sample collection for laboratory tests. If myiasis is vulvar, lesions are investigated and the patient is screened for possible associated sexually transmitted infections.

In case of secondary myiasis, administration of an oral dose of ivermectin 0.2 mg/kg is recommended (i.e. one 6 mg tablet for every 30 kg of body weight) in a single dose. Administration should begin with 12 mg as a single dose or 18 mg for patients weighing between 60 and 90 kg [8,13].

Re-evaluation of the lesions 24 hours after treatment. An additional dose of 6-12 mg of ivermectin, if necessary [8].

Forty-eight hours after the initial treatment, the patient is referred to surgery and any remaining larvae are extracted mechanically using sterile tweezers. Care should be taken to remove the larvae in their entirety so as to avoid the formation of an abscess and facilitate healing [9,12].

Removal of any larval residues that, if left, could cause infection. This procedure is performed using 0.9% saline solution.

Application of an occlusive dressing that must be changed daily, following the application of antibiotic ointment after cleaning the lesion with sterile material to prevent re-infestation [9].

If there are signs of secondary infection, systemic antibiotic therapy is associated and medical follow-up is provided.

The patient is evaluated by the social service staff whenever deemed necessary.

The pain disappeared completely in the first three patients. In 1999, Pasqualette et al. [17] reported two cases of furuncular myiasis of the breast, which were completely resolved after the orifice was obstructed and the larvae removed. No maggots were identified. These cases do, however, underline the need to perform a differential diagnosis with inflammatory processes of the breast.

In 2005, Silva et al. [18] described a case of myiasis in the perineal region, affecting the sphincter and anal canal, in which treatment

consisted of removing the larvae and cleaning the necrotic area daily with an antiseptic solution. However, larvae were still found four days after the initial extraction. The larvae were identified as *Cochliomyia hominivorax*. It has been noted that the use of ivermectin in patients in whom myiasis is associated with necrotic or devitalized tissue may facilitate the process of removing the larvae, as occurred on the first case of this paper. Attempts to remove live larvae from these tissues may cause them to penetrate deeper into the tissue. On the other hand, patients with infestations of myiasis in intact, uninjured cavities may benefit from the simple removal of the larvae and the subsequent application of antiseptic substances, as in the fifth case. This was confirmed in another report by Silva et al. [19] published in 2005, where the larvae were also identified as *Cochliomyia hominivorax* and, probably deposited in the vagina by insects attracted by the patient's poor vulvovaginal hygiene.

Martinez et al. [2] also described a case of vulvar myiasis caused by larvae of the species *Cochliomyia hominivorax* in an elderly patient with hygiene condition, as on the first and second cases of this paper. However, the treatment was performed with mechanic removal, debridement and flap rotation. Still on the first case, not rarely human genital myiasis is usually present with concomitant venereal diseases and also commonly seen in immunocompromized individuals [7].

No report under the involvement of breast lesion by larvae of *Sarcophaga* was found. However, Cillas et al. [20] published in 1992 a vulvar myiasis case just like this in a 86-year old diabetic patient, which treatment was performed only by mechanic removal and antiseptic.

On the third case, Nunes et al. [3] also described a furuncular myiasis case on the patient's gluteal, who lives in a farm area. The maggot was identified as *Dermatobia hominis* and was removed finally.

The safety of ivermectin during pregnancy has yet to be established, although it is considered a Category C drug by the US Food and Drug Administration (FDA). Studies conducted in rats

given ivermectin throughout pregnancy and lactation found no signs of teratogenicity, thus justifying administration of this drug to pregnant women with major infestations; however, additional studies are required [21].

In view of these data, this institute took the decision to use ivermectin routinely in non-pregnant patients with secondary myiasis. With respect to primary myiasis, each case is evaluated individually. All the aforementioned patients progressed satisfactorily; however, they failed to return for re-evaluation.

Conclusion

Myiasis of the genitals or breasts is uncommon. However, when infestation occurs at these sites, it is usually associated with previous lesions, precarious health conditions and often with a rural environment that favors contact with these parasites. It is important to standardize a protocol for the treatment of myiasis and to perform an adequate social evaluation of these individuals as a means of promoting health.

Conflicts of interest

The authors declare that there are no conflicts of interest associated with this paper.

References

1. Arora S, Sharma JK, Pippal SK, Sethi Y, Yadav A. [Clinical etiology of myiasis in ENT: a raterograde period - interval study]. *Braz J Otorhinolaryngol.* 2009;75:356-61.
2. Martinez CA, Romani G, Priolli DG, Campos AA, Carneiro VP, Dalbem CA. [Vulvar myiasis: a case report]. *Rev Bras Ginecol Obstet.* 2003;25:291-5.
3. Nunes RV, Ferraz AC, Gadelha BQ, Coelho VM, Lessa CS. [Furuncular myiasis in atipic localization]. *Medicina.* 2009;42:164-6.
4. Passos MR, Varella RQ, Tavares RR, Barreto NA, Santos CC, Pinheiro VM, et al. Vulvar myiasis during pregnancy. *Infect Dis Obstet Gynecol.* 2002;10:153-8.
5. Cavalcanti AL. [Oral myiasis: etiology, diagnosis and treatment]. *Rev Fac Odontol*

Porto Alegre. 2008;49:32-5.

6. Ferraz AC, Nunes RV, Gadelha BQ, Nascimento BP, Pedro RE, Coelho VM, *et al.* [A rare case of myiasis by *Cochliomyia hominivorax* (Diptera: Calliphoridae) and *Dermatobia hominis* (Diptera: Oestridae) in a human patient]. Arq Ciênc Saúde. 2008;15:142-4.
7. Passos MR, Carvalho AV, Dutra AL, Goulart Filho RA, Barreto NA, Salles RS, *et al.* Vulvar myiasis. Infect Dis Obstet Gynecol. 1998;6: 69-71.
8. Ribeiro FA, Pereira CS, Alves A, Marcon MA. [Treatment of human cavitary myiasis with oral ivermectin]. Rev Bras Otorrinolaringol. 2001;67:755-61.
9. Marquez AT, Mattos MS, Nascimento SB. [Myiasis associated with some socioeconomic factors in five urban areas of the State of Rio de Janeiro]. Rev Soc Bras Med Trop. 2007;40: 175-80.
10. Boros LF, Boros LH, Boros LF, Silva PA, Bordini Júnior J. [Lip myiasis]. Revista Dens. 2006;14:1-10.
11. Shinohara EH, Martini MZ, Oliveira Neto HG, Takahashi A. [Oral myiasis treated with ivermectin: case report]. Braz Dent J. 2004;15:79-81.
12. Nunzi E, Rongioletti F, Rebora A. Removal of *Dermatobia hominis* larvae. Arch Dermatol. 1986;122:140.
13. Brasil. Ministério da Saúde. Dermatologia na atenção básica. 2002.
14. Richards KA, Brieva J. Myiasis in a pregnant woman and an effective, sterile method of surgical extraction. Dermatol Surg. 2000;26:955-7.
15. Martin-Prevel Y, Cosnefroy JY, Tshipamba P, Ngari P, Chodakewitz JA, Pinder M. Tolerance and efficacy of single high-dose ivermectin for the treatment of loiasis. Am J Trop Med Hyg. 1993;48:186-92.
16. Saldarriaga W, Herrera E, Castro D. Myiasis in uterine prolapse, successful treatment. Am J Obstet Gynecol. 2011;205:e5-6.
17. Pasqualette HA, Soares Pereira PM, Calás MJ, Santos RC, Manoel VR. [Breast myiasis – report of 2 cases]. Rev Bras Ginecol Obstet. 1999;21:483-6.
18. Silva BB, Sabas CV, Coelho EG, Macahdo V, Borges US, Silveira Filho MA. Genital myiasis in a woman with psychiatric disturbance. BJOG. 2005;112:1000-1.
19. da Silva BB, Borges US, Pimentel IC. Human vaginal myiasis caused by *Cochliomyia hominivorax*. Int J Gynaecol Obstet. 2005;89:152-3.
20. Cilla G, Picó F, Peris A, Idígoras P, Urbieta M, Pérez Trallero E. Human genital myiasis due to *Sarcophaga*. Rev Clin Esp. 1992; 190:189-90.
21. Medeiros JP, Baratella-Evêncio L, Simões RS, Luz LE, Estevão LR, Simões MJ, *et al.* [Effect of treatment by ivermectin on pregnancy and lactation periods of rats (*Rattus norvegicus albinus*)]. Arq Inst Biol. 2007;74:17-21.