Case Report: Nasal Myiasis in an Elderly Patient with Atrophic Rhinitis and Facial Sequelae of Leprosy

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Abstract. We describe a case of nasal myiasis in an 89-year-old Brazilian patient affected by leprosy with severe nasal sequelae. An initial treatment comprising sinusectomy combined with nasal endoscopy removed more than 300 larvae, supplemented by systemic treatment using oral and topical ivermectin and levofloxacin. Infestation recurred after 2 months, was treated similarly, and resolved completely. The case could be attributed to severe nasal leprosy sequelae, with a lack of sneezing reflex, painless ulceration, atrophic rhinitis (ozena), and inability to clean the nose properly due to hand and nose impairment. This case illustrates the importance of long-term medical follow-up of patients with leprosy sequelae.

INTRODUCTION

Myiasis is defined as the infestation of humans and vertebrate animals by dipterous larvae.¹ These larvae feed mainly on not only living or dead tissue but also on fluid substances in the affected area. When the larvae are in the nasal cavity, the infestation is termed “nasal myiasis.” Most cases occur in rural areas of tropical countries where sanitation is deficient, and the hot and humid climate provides the ideal environment for larvae to hatch. Larvae migrate to the nasal cavities and paranasal sinuses, where they develop and multiply, feeding on secretions from lesions, destroying the mucous membrane covering the nasal cavities, cartilage, and bone. In advanced stages, the larvae can invade the meninges and skull, ultimately leading to death.²

Atrophic rhinitis (ozena) is a chronic disease characterized by yellowish secretion in the initial phase, followed by fetid crusting and atrophy of the nasal mucosal lining.³ As with myiasis, higher incidence of atrophic rhinitis occurs in regions of low socioeconomic development. Etiology is variable or unknown, including chronic bacterial infection, and atrophic rhinitis can occur secondary to injury, chronic granulomatous disorders, and Hansen’s disease (leprosy), although relatively few case reports of myiasis secondary to leprosy have been published.⁴

Leprosy is a chronic neurocutaneous infectious disease of slow evolution.⁵ Besides affecting the skin and peripheral nerves, leprosy can also compromise the structures of the ear, nose, mouth, pharynx, and larynx.⁶ In advanced stages of multibacillary leprosy, the bloodstream into the nasal mucosa is reduced, leading to a high risk of local secondary infection and ulceration. Over time, it can progress to mucosa hypotrophy, perforation of the nasal septum, and destruction of the nasal cartilage and bones.⁷

The signs and symptoms of nasal myiasis are usually related to the presence and movement of the larvae, and include nasal and/or facial pain, bloody or mucopurulent nasal secretion, epistaxis, foul smell, and anosmia.⁸ However, in a person affected by advanced lepromatous leprosy presenting

with nasal sequelae, some of those symptoms may be absent because of sensory impairment of nasal mucosa. Here, we report a recurrent case of nasal (nasosinus) myiasis in an elderly patient with atrophic rhinitis secondary to lepromatous leprosy that highlights the importance of regular follow-up in people with leprosy sequelae. Although the nasal myiasis relapsed after the first treatment, it had a favorable resolution after the second.

CASE DESCRIPTION

The patient was an 89-year-old man diagnosed with lepromatous leprosy when he was aged 46 years and who had been compulsorily hospitalized in the Colony Hospital Pedro Fontes in the state of Espírito Santo, Brazil, in 1970. He was treated with dapsone monotherapy between 1970 and 1984. In 2000, he was retreated with the WHO multidrug therapy for multibacillary leprosy (MDT-MB), comprising dapsone, rifampicin, and clofazimine. After 24 months of MDT-MB, he was considered cured of leprosy. He later developed erythema nodosum leprosum (leprosy reaction episodes) and was treated with oral prednisone and thalidomide for many years.

Under clinical facial inspection, the patient presented with *facies leonine* (Figure 1). Neurological evaluation showed the absence of the corneopalpebral reflex; rhinoscopy showed a large septal perforation, atrophy, and crusts of the lower and medium turbinates; and oroscopy showed gum disease and absence of all teeth in the upper jaw. He also presented with disabilities of the hands and feet. The patient presented with atrophic rhinitis with nasal sequelae.

Nasal and sinus CT scans showed evidence of nasal bone collapse, total bone resorption, complete resorption of the anterior nasal spine, septal perforation, atrophic middle and inferior turbinates, absence of upper incisors, and partial resorption of the supra incisive alveolar region of the alveolar process of the maxilla (Figure 2).

Three months after the previous evaluation, the patient presented with a nasal myiasis infestation and was immediately hospitalized. A repeat sinus CT scan was performed (Figure 3). Sinusectomy combined with nasal endoscopy was performed for the removal of crawling maggots by direct vision with the help of forceps. More than 300 larvae were withdrawn. Systemic treatment using 6 mg single

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FIGURE 1. Facial inspection, lateral view, showing “saddle nose” (small columella, falling from the tip of the nose). This figure appears in color at www.ajtmh.org.

dose of oral ivermectin, levofloxacin 500 mg for 10 days, and local nasal dressing with topical ivermectin were prescribed.

After 2 months, there was a recurrence of the infestation, and the patient again underwent the same surgery for foreign body removal (Figures 4 and 5). Again, 6 mg single dose of oral ivermectin, 500 mg amoxicillin plus clavulanate potassium

FIGURE 2. Paranasal sinus CT scan—coronal section, showing septal perforation and atrophy of inferior and middle turbinates.

FIGURE 3. Paranasal sinus CT scan—coronal section, showing septal perforation, atrophy of inferior and middle turbinates, soft tissue thickening of palatal area, nasal septum, and erosion of the bony wall of the nose and sinus, hard palate, and ethmoidal air cell. Also, presence of maggots.

125 mg orally for 10 days, and nasal dressing with topical ivermectin were prescribed. On this occasion, the infestation was completely resolved. 6 months later, the patient died from an acute myocardial infarction.

FIGURE 4. Maggot withdrawal during the second surgical approach. This figure appears in color at www.ajtmh.org.

FIGURE 5. Maggot withdrawal during the second surgical approach. This figure appears in color at www.ajtmh.org.

DISCUSSION

Nasal myiasis is common in tropical and subtropical areas of the world. The disease is usually seen in those older than 50 years and occurs equally in both sexes, with risk factors including poor hygiene, low socioeconomic status, and the presence of preexisting suppurative conditions.⁹ Nasal myiasis occurring in people who suffer from atrophic rhinitis can be explained partly by a reduced sneezing reflex and widened nasal cavity. In our case, the insect species was not positively identified because in routine practice, maggots are discarded, but nasal myiasis can involve housefly (*Musca domestica*) larvae (maggots).¹⁰ The flies are attracted by odoriferous secretion and deposit their eggs on nasal lesions, and larvae hatch within 8–24 hours. The larvae reach the nasal surface, which is rich in crusts, blood, and mucosal discharge. After a few weeks of larval infestation, they will cause extensive destruction of surrounding tissues.⁸

Diagnosis in most cases can be easily performed by clinical examination.¹ Nasal endoscopy will reveal crawling maggots inside the nasal cavity, combined with alterations in the mucous membrane, secretions, and necrotic tissue. Imaging approaches such as CT scans of the nose and sinus are useful to indicate the extent of the infestation and whether maggots have spread beyond the nasosinus area. Although evidence for the effectiveness of treatments for atrophic rhinitis is lacking, management using nasal solutions can decrease local infection and crusts.⁴ In the case that we described, antibiotics were prescribed empirically at second and third presentations according to guidelines.¹¹ When associated with nasal or nasosinus myiasis, mandatory treatment

comprises hospitalization and sinusectomy for the removal of larvae, systemic ivermectin, and broad-spectrum antibiotics.

The case presented here was a person affected by leprosy with severe nasal sequelae, and the larvae infestation could be attributed to the lack of sneezing reflex, painless ulceration, atrophic rhinitis, and the inability to clean the nose properly due to hand and nose impairment. Brazil is an endemic country for Hansen's disease (leprosy). Despite considerable efforts used in combating the disease, deformities and disabilities remain a major public health problem, and our case illustrates the importance of regular medical follow-up of leprosy sequelae, which involve mainly the nose, eyes, hands, and feet. Attention should be paid to the elderly patient population, particularly to those persons who were segregated into leprosy colony hospitals in Brazil, and who were not reintegrated into their families but are still living in the colonies. This policy of segregation makes it even more incumbent on the Brazilian state to ensure a high standard of care and to fund and implement measures to ensure a better quality of life for these patients.

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