



MYIASIS FREQUENCY IN PATIENTS OF THE HOSPITAL DAS CLINICAS OF FEDERAL UNIVERSITY OF GOIAS, BRAZIL.

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Palavras-chave: Human myiasis, obligatory myiasis, facultative myiasis, pseudomyiasis, *Cochliomyia hominivorax*, Sarcophagidae, *Eristalis tenax*.

1. INTRODUCTION: Myiasis (derived the Greek term “myia”, meaning fly) are infestations vertebrate animal and human tissue, by Diptera larvae. Flies, mainly Muscomorpha, lay eggs or larvae on food, necrotic tissue, open wounds, skin or mucosa, and these larvae feed on living or necrotic tissues and liquid body substances of the host or on undigested food.^{5,4}

The myiasis can be classified according to the biology of fly. In obligatory myiasis, when larval flies develop in living tissue. In facultative myiasis, when maggots feed on decomposing matter or necrotic tissues, and in pseudomyiasis, when the eggs or larvae are ingested by food or water contaminated.⁴

The frequency or prevalence of the different kind of myiasis is still unknown in Goiás. And it was one of the facts which motivated the present study, as well as the wish to discover in deep the entomofauna responsible for the etiology of human myiasis in this state, considering the different behavior and biology of the Muscomorpha species, to foment new and more efficient strategies of control and prophylaxis against these flies which cause myiasis and pathogen transport by sinantropic species. This Emergency Room of Hospital das Clínicas da UFG (HC) treats hundreds of people from Goiânia and several municipalities of the State of Goiás and even people from nearby states.

2. MATERIAL AND METHODS: Patients treated at the emergency room of The HC between February 2005 and August 2006 were seen by a doctor and a nurse in the procedures room. The lesions were treated and necrosis tissues and larvae of myiasis were removed in the patients when they were admitted. Diptera larvae of patients were to identification of larvae according to the taxonomic keys^{3,6}. The larvae were used to provide the pupation and to the taxonomic identification. These were identified using macroscopic and microscopic analysis, made by the keys to larvae identification mentioned above. The 2nd and 3rd instars larval were analysis under a microscope stereoscopy, observing principally the ornamentation of the breath stigmas, anterior and posterior spiracles and, the aspect of tracheal pigmentation, besides of others morphological characters. To permit the

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development adults, the instars larval collected alive were maintained in Biological Oxygen Demand (B.O.D.)² incubator at $27 \pm 1^\circ\text{C}$, $\text{RH} \geq 80\%$ and a 12:12h photoperiod and, fed with bovine meat until the pupation. The pupae were conditioned in polyethylene disposable recipients, containing well-sifted sawdust previously autoclaved and, daily moistened with distilled water to maintain the humidity. The identification of the adults flies were confirmed by the keys presented by³ Guimarães and Papavero (1999). The research was realized under the norms of *Ethics Commission in Human and Animal Medical Research* (register CEPMHA/HC/UFG n° 044/2005), to preserve good health and to establish confidence and good relationship between patients and researches.

3. RESULTS AND DISCUSSION: In the present study 66 patients were seen and treated. Myiasis occurred in patients from 2 to 91 years of age of both sexes, though predominantly in the male sex, and was observed in furuncle and multiple forms. During this period 66 cases of myiasis were diagnosed. The Figure 1 show the classification of the myiasis observed.

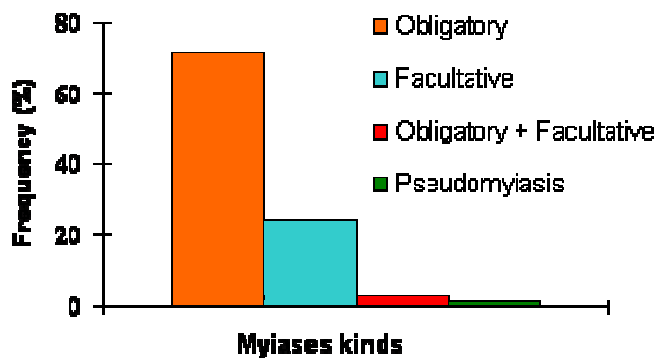


Figure 1. Myiasis classification founded on patients of different sex and age, of the Hospital das Clínicas of UFG, in the period of February of 2005 to August of 2006.

Figure 2 shows the larval flies identified in human wounds. The 3rd larval instars were the most common, found in around 66.66% of the cases with the 1st and 2nd larval instars adding up to only 9.09% while in 24.24% of the cases there was an association between all instars. Each lesion had a number of larvae varying between 1 to 261 larvae.

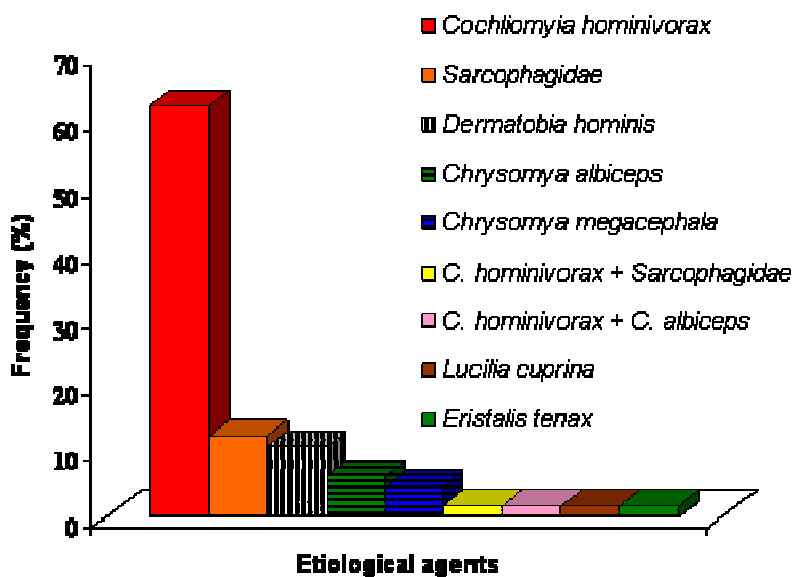


Figure 2. Etiology of the myiasis diagnosed in patients at the HC / UFG, in the period from February 2005 to August 2006.

The Figure 3 shows the interaction between the myiasis, the illnesses and predisposing factors. Most of the cases were associated with inadequate care and lack of hygiene and a low economic level. Most of the patients had as overall family income the Brazilian minimum wage, and only 9.09% of the people had a slightly better salary. The patients in which myiasis occurred were between 2 and 91 years of age, 56.06% being of working age. Eighteen cases occurred in elderly patients (27.27%) and 11 cases in children (16.66%) thus being more frequent in adults (83.33 %) than in children and more frequent in males (65.15%) than in women, in which the number of occurrences was near to the half (34.84 %). It was also more frequent in people of working age (56.06%) than in elderly, retired citizens (27.27%).

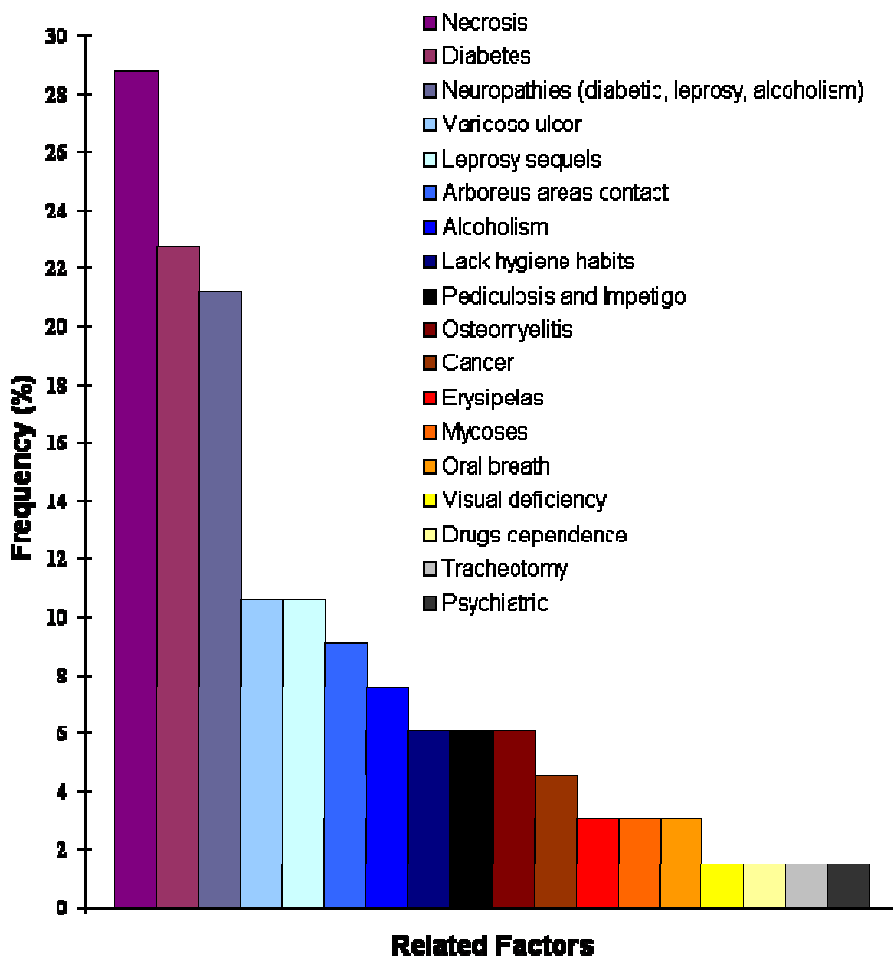


Figure 3. Factors associated to cases of myiasis diagnosed in patients at the HC / UFG, from February 2005 to August 2006.

The myiasis treated were classified in relation to the localization of the lesions (Figure 4). The multiple myiasis occurred mainly in the inferior limbs (66.66%), usually due to lack of care and parental attention, lack of hygiene and improper bandaging and cleansing of the wounds which caused bad odors, attracting flies. Several cases of children with multiple scalp myiasis, were associated with pediculosis and impetigo. Most of the clinical cases observed were associated with the lack of care and hygiene and at a low socioeconomic level (90.91%). Most of the patients only earned minimum wages. These myiasis were in some cases due to some mental, neurological or psychiatric deficiency or to ulcers of the legs due to deep vein thrombosis, patients with complications due to diabetes, bedridden patients and children.

In our group of patients the myiasis were related to poor and malnourished people, who live alone or who are cared for by relatives who are not so concerned with their well-being. These results are in accordance to research conducted by Durighetto et al. (1995)¹, which related the appearance of myiasis to improper care, bad living and hygienic conditions, malnutrition, alcoholism, mental retard, senility, trauma, paralysis, oral breathing during sleep, and the presence of necrosis or infection, conditions that can be attractive to flies.

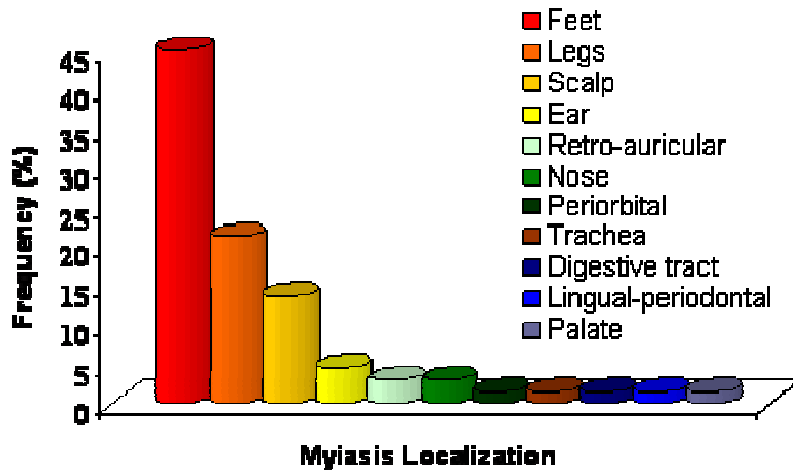


Figure 4. Bodily localization of myiasis diagnosed in patients at the HC / UFG, from February 2005 to August 2006.

A bigger incidence was expected in patients with neurological sequels, but they were not predominant and occurred more frequently in professionally active people. It was observed that most infestations occurred not in bedridden patients, but in people with inadequate hygiene and care. There was a higher incidence in people with lower economic conditions, which could be understood as a cause for the least care. There really were more cases of patients with low social-economic level and bad living conditions, lack of hygiene or dwelling, and inadequate caring for lesions or the failure to daily change dressings and cleanse the wounds. It was verified that the larvae could pass through the dressings wet with secretion. Myiasis was associated with pediculosis and impetigo and certain negligence on the behalf of the parents could be observed, where the children were taken care of by other infants.

It is very important to change wound dressings every day or whenever the lesion becomes wet with secretion, for the reason that it could attract flies, which are also attracted by chronic medium Otitis, the cause of many cases, where flies were attracted by the smell. The myiasis shown are very harmful; however, in a case of necrotic erysipelas, the presence of facultative myiasis was beneficial in cleansing the wound. These larvae cleansed the wound and promoted a good granulation of the woven sub dermal tissues. This data suggests future studies to use of these facultative myiasis larvae in larval therapy.

In relation to the climatic conditions, it did not have great influence of the temperature, seen little variation and considering that the tropical climate is sufficiently favorable to the development of the biological cycle of Muscomorpha species, for all presenting favorable temperatures during the year. The relative humidity of air and the rainfall had positively influenced the occurrence of myiasis as mainly evidenced from November of 2005 (Figure 5).

In contrast of the consulted literature, we do not believe that myiasis human beings are of rare occurrence. We observe that the register of this disease in the medical handbook many times is not carried through by factors as: 1. for being an

illness of not obligatory register; 2. traditional it repulses in general caused to the patient and professionals of health for the larvae, injury and odor, leading to the simple discarding of the larvae and dressing; 3. Many professionals of health judge myiasis as a disease of lesser importance; 4. As well as some familiar patients and, leading to the domestic, empirical treatment; 5. Many cases of lesser gravity are taken care of in posts of health in the proper quarters where the patients inhabit.

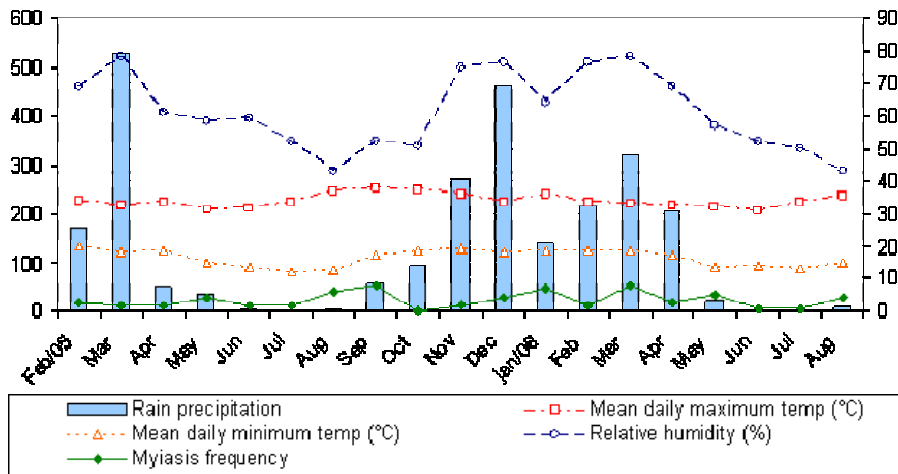


Figure 5. Correlation between climatic parameters and Myiasis distribution found at the HC / UFG, from February 2005 to August 2006.

This is the first study about the occurrence of myiasis human beings in Goiás with involvement of *C. hominivorax* and others species of the main groups related to the aetiology of myiasis: Calliphoridae and Sarcophagidae and Cuterebrinae. This comes to excite the necessity of the awareness of the professionals of health of the importance of the register of this disease, and of the identification of the involved species. These data could indicate which more the treatment and adjusted prophylactic orientation for each patient, as well as elucidating the pathogenic potential of the different species, in order to guide the specific measures of control of these parasites.

4. ACKNOWLEDGMENTS: We thank the laboratory colleagues of the LAMV that helped with the creation of part of the studied specimens. This work was partially supported by CNPq and FUNAPE-UFG.

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