

## Nasal Myiasis: A Neglect State

Delwar AHM\*, Mazumder JA, Rashid MS, Mustafa MG and Swamy KB

Associate Professor, Comilla Medical College & Hospital, Comilla, Bangladesh

### \*Corresponding author

AHM Delwar, Associate Professor, Comilla Medical College & Hospital, Comilla, Bangladesh

Submitted: 05 Jan 2021; Accepted: 11 Jan 2021; Published: 19 Jan 2021

### Abstract

**Background:** Nasal myiasis is a parasitic condition of human being and animal species in which nose and paranasal sinuses infested by Diptera Larvae of *Chrysomya albiceps* and *Oestrus ovis* group of flies. It is rare and sporadic, usually occurs in adults, the elderly, debilitated poor, and neglected patients suffering from chronic Sinonasal diseases.

**Methods:** A cohort retrospective study of 11 cases in the Department of Otolaryngology and Head-Neck Surgery, Comilla Medical College Hospital, Cumilla, Bangladesh from 01 July 2016 to 31 June 2020.

**Results:** Incidence of nasal myiasis out of total admitted in the inpatient department was 0.03%. Of them, the female was 10 (90.91%), the male 01 (9.09%) ( $P$ -value  $<0.001$ ), age range 35-70 years, the adult was 09 (81.82%), and the elderly 02 (18.18%) ( $P$ -value  $<0.001$ ). The left nostril exhibited 08 (72.73%), and right nostril 03 (27.27%) ( $P$ -value  $<0.05$ ). Social class showed poor was 08 (72.73%), and lower middle class to working 03 (27.27%) ( $P$  value  $<0.05$ ), villagers was 09 (81.82%), and slum dwellers 02 (18.18%) ( $P$ -value  $<0.001$ ), Sinonasal mass was 07 (63.64%), and atrophic rhinitis 04 (36.36%) ( $P$ -value  $<0.001$ ), Sinonasal malignancy was 06 (85.71%), and benign 01 (14.29%) ( $P$ -value  $<0.001$ ). Conservative traditional treatment was 07 (63.64%), and endoscopic removal 04 (36.36%) ( $P$ -value  $<0.001$ ), recovery without complication was 10 (90.91%), and complication occurred in 01 (9.09%) ( $P$  value  $<0.001$ ). Conclusion: Nasal myiasis is a progression of other disease processes of the nose and paranasal sinuses of adults and the elderly in a low socioeconomic group of people. They need extra care medical services to overcome it.

**Keywords:** Chrysomya, Nose, Paranasal Sinuses, Sinonasal Mass, Atrophic Rhinitis.

### Introduction

Nasal myiasis is well-known as a maggot in the nose. Maggots {Figure-4} are the larval forms of flies {Figure-6}. Scientific categorizing of flies chrysomya group of Genus confined in tropics and subtropics countries where they are abundant [1]. *Chrysomya albiceps* is associated with myiasis in the human being and animal species of Africa and Asia. Still, its rules are more destructive and act as a predator than other larvae groups [2]. *Oestrus Ovis* is another type of Dipterans group of flies known as the sheep bot fly laying the larvae on the nose and face of sheep or shepherd and sometimes transmit the larvae through hands to the nose by shepherd himself [3]. Nose, ear, and eye are the most common invasion sites in the E.N.T. and Head-Neck region of human beings [4]. It is a rare disease but more appearance in the developing low-income tropical countries of poor adults and elderly villagers who neglected their hidden nasal disease process living in the unhygienic condition [5]. Maggots or myiasis can categorize into obligatory, facultative, and accidental. An obligatory maggot can't make ATP in the absence of oxygen, so they depend on the live host tissue to grow, survive, and reproduce. In the case of facultative and accidental maggots beset in the necrotic and decomposed tissue

of humans and animals, they can switch to fermentation from live tissue to necrotic tissue [6]. The associated factors grossly related to nasal myiasis are Sinonasal neglected or untreated mass, atrophic rhinitis, chronic infections like tuberculosis, leprosy or Hansen's disease, mentally retarded, and prolonged bed-ridden patient [7]. Flies particularly, Genus *chrysomya albiceps* attract by the foul-smelling nasal discharge emanating from cases of atrophic rhinitis, infected nasal mass, syphilis, or leprosy lay eggs about 200 at a time, which within 24 hours hatch into larvae [8]. Maggots' primary clinical features exhibited blood-stained nasal discharge or frank epistaxis, intense irritation, itching, sneezing, headache, fetid odor, and foreign body sensation [9]. Suppose the patient is middle age, elderly, poor, and neglected. In that case, maggots move to the nose's deep tissue and paranasal sinuses in the first three days and cause extensive destruction to the nose, paranasal sinuses, the soft tissue of the face, and palate [10]. Sometimes it's a destructive process, and infection may spread to meninges produce meningitis and even death [11]. There is no treatment consensus in nasal myiasis as it is rare in developed countries [12]. So, both conservative traditional and endoscopic surgical removal of maggots or larvae is practiced worldwide [13].

Conservative treatment includes installing turpentine oil-soaked gauze wick in the nose causes crawling out of maggots from the nose. Installation of chloroform, Ether, Halothane drops kill the maggots and nasal douche with warm normal saline, debridement of necrotic and unhealthy tissue regularly with anti-parasitic drug Ivermectin or Pyrantel pamoate improve the patient's condition successfully [14]. On the other hand, endoscopically removing maggots by direct vision takes a shorter period, early removal from the deep and inaccessible area before the widespread destruction of nasal structures [15].

The study finds out the relative incidence, presenting features, associated predisposing factors, comparing the advantage of different treatment procedures, and complications for it.

### Methods and Materials

It is a cohort retrospective study of 11 cases in the Department of Otolaryngology and Head-Neck Surgery, Comilla Medical College Hospital, Cumilla, Bangladesh, from 01 July 2016 to 31 June 2020. During these four years, 31890 patients got admitted to the E.N.T. inpatient department, in which the nasal myiasis was 11. All patients were clinically diagnosed with nasal myiasis and confirmed by history, examination, and investigations; X-Ray nose and paranasal sinuses, C.T. scan, an M.R.I., whichever were needed. Routine investigations like Complete blood count, B.T., CT, Blood sugar, Serum creatinine, Urine R/M/E, X-Ray chest P/A view, E.C.G., and ECHO did see the general patient condition and anesthetic fitness. Our patient mainly presented with epistaxis and a history of maggots crawling out from the anterior nostril and sometimes posterior nostril through the mouth. After all, we found two types of diseases associated with myiasis: Sinonasal mass and atrophic rhinitis but didn't see other pathologies like T.B., leprosy, and midline disease condition. Treatment started with removing visible maggots by Talley's and small crocodile forceps and installing a small ribbon gauze wick soaked in turpentine oil placed in the nasal fossa patient suffered from atrophic rhinitis. All maggots came from a deep area of the nasal fossa and paranasal sinuses. We used Rigid Hopkin's Telescope to remove the maggots by direct endoscopic vision after spraying the nasal fossa with 15% lidocaine anesthetic spray. In Sinonasal mass, we installed halothane drop by drop in the nasal fossa due to the nasal fossae occupy the nasal assembly and kills all the maggots. Afterward, the nasal fossa's warm regular saline irrigation by Higginson's syringe removed slough, crust, and dead maggots. It continued up to the removal of maggots and healthy tissue found. We used the mosquito net to isolate the patient from flies to prevent hatching larvae again. At the same time, we treated the patient with the anti-parasitic drug Ivermectin 12 mg daily for 05 days. Supporting treatment included Tab Linezolid 600 mg two times daily for 07 days, Cap Clindamycin 300 mg three times daily, and Tab Metronidazole 400 mg three times daily to prevent secondary bacterial infection and heal a deadly wound by maggots. One patient developed orbital cellulitis, and she attended to us with 3rd instar stage of larvae {Figure-5}. We treated her accordingly.

The following data had collected about the patient: Gender, age, laterality, socioeconomic status, residence, associated disease factor, treatment, and complications. Descriptive and inferential statistics used to calculate the data. Microsoft office used to cite figures and tables.

### Results

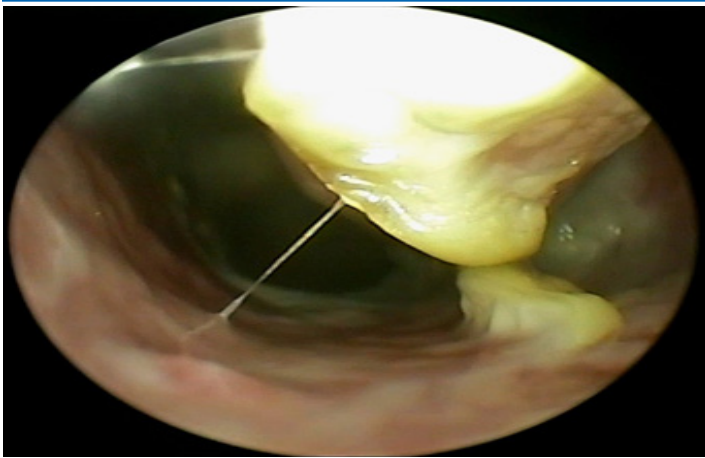
Incidence of the nasal myiasis, out of total inpatient department was 0.03%. Our desired confidence level was 95% ( $Z=1.96$ ), where the standard error is 0.01 and confidence interval from 10.98 to 11.02. Of them, the female was 10 (90.91%), and the male 01 (9.09%),  $Z$  value is  $6.53 > 3$ , so  $P$  value  $< 0.001$ . Age ranges from 35-70 years, mean age 51.64, the standard deviation 11.26, the standard error 3.40, 95% (Critical value  $Z=1.96$ ) confidence interval from 44.98 to 58.20, co-efficient of variation 21.81. The adult was 09 (81.82%), and the elderly 02 (18.18%),  $Z$  value is  $3.87 > 3$ , so  $P$  value  $< 0.001$ . The patient socio-economic class which determined by the income, poor was 08 (72.73%), working class to lower middle class 03 (27.27%),  $Z$  value  $= 2.4 > 1.96$ , so  $P$  value  $< 0.05$ . Residence history evaluated villagers was 09 (81.82%), slum dwellers were 02 (18.18%),  $Z$  value  $= 3.87 > 3$ , so  $P$  value  $< 0.001$ . Laterality exhibited left nostril was 08 (72.73%), right nostril 03 (27.27%),  $Z$  value  $= 2.39 > 1.96$ , so  $P$  value  $< 0.05$ . Associated disease condition revealed Sino nasal mass 07 (63.64%) {Figure-2}, atrophic rhinitis 04 (36.36%) {Figure-3},  $Z$  value  $= 3.18 > 3$ , so  $P$  value  $< 0.001$ , among Sino-nasal mass, Sino-nasal malignancy was 06 (85.71%), benign 01 (14.29%),  $Z$  value  $= 3.82 > 3$ , so  $P$  value  $< 0.001$ . Treatment option displayed conservative traditional medical treatment was 07 (63.64%), endoscopic removal 04 (36.36%),  $Z$  value  $= 3.18 > 3$ , so  $P$  value  $< 0.001$ . Complications, Orbital cellulitis occurred in 01 (9.09%) of female patient {Figure-1}, Others 10 (90.91%) patients recovered from myiasis without complication,  $Z$  value  $= 6.53 > 3$ , so  $P$  value  $< 0.001$  {Table-1}.



**Figure 1:** Nasal Myiasis of the left nose with left orbital cellulitis of a neglected old lady.



**Figure 2:** Nasal myiasis of the left nose with a neglected nasal mass of an old lady.



**Figure 3:** Endoscopic view of a neglected case of Atrophic Rhinitis with nasal myiasis.

**Figure 5:** The fly responsible for maggots (original).



**Figure 4:** The maggots (original).

**Figure 6:** The 3rd instar stage of Larvae (original).

**Table 1: Depends on proportion, Z, and P-value of different types of Variables.**

Variables	Proportion/Characteristics		Zvalue	P-Value
Patients number	Total=100%	Sample=0.03%	3.07	P<0.001
Sex	Female=90.91%	Male=9.09%	6.53	P<0.001
Age	Adult=81.82%	Elderly=18.18%	3.87	P<0.001
Laterality	Left nostril=72.73%	Right nostril=27.27%	2.39	P<0.05
Socioeconomic status	Poor=72.73%	Working class to lower middle class=27.27%	2.39	P<0.05
Residence	Villagers	81.82%	3.87	P<0.001
Disease	Sino-nasal mass=63.64%	Atrophic rhinitis=36.36%	3.18	P<0.001
Sino-nasal mass	Malignancy=85.71%	Benign=14.29%	3.82	P<0.001
Treatment	Conservative Traditional=63.64%	Endoscopic=36.36%	3.18	P<0.001
Complications	Recovery Without complication=90.91%	Orbital cellulitis=9.09%	6.53	P<0.001

## Discussion

As a rare entity, nasal myiasis often occurs in developed countries. Many articles were case reports only [3, 12, 16]. Only 04 cases reported in Korea [16-19]. It is a disease of the tropical countries and had some case series present in the countries of hot and humid areas like China and the Indian Sub-continent [8, 13, 20].

Considering gender epidemiology, the female was 90.91% more than the male 9.09% in our study kept up by Ranga et al. Showed the female 72.22%, the male 27.78%, full case reports showed only female preponderance, others were male [16, 20-22].

Regarding age, range from 35-70 years, mean 51.64 in our paper held up by Ranga et al. Series revealed age range 40-60 years and meant 56.4, by Kim et al. Case report 76 years old, Serafim et al. 89 years, and Kuruvilla et al. Patient age near to our patient mean age [16, 20, 23, 24].

About laterality, bilateral were absent in our series, left nostril was 72.75%, and right nostril 27.27% against our paper by Ranga et al. Research, displayed bilateral was 15.28%, right 47.22%, and left 37.50%, P. Hoyer et al. Case reports in left nostril, Barazi et al. And Han et al. In right nostril. This may be because the neglected Sinonasal mass was present in the left nostril in our study [3, 20, 21, 25].

Personal history revealed, low was 77.73%, and the working to lower middle class 27.27% in the current study carried out Ranga et al, Sharma et al. Al Jabr et al. Works showed all patients were poor and in low socioeconomic status [20, 21, 26].

Resident history exhibited; villagers were 81.82%, and slum dwellers 18.18% in our paper, held up by Ranga et al., reported all patients to have a rural background, and supported by Arora et al. and Singh et al. series also [26, 4, 27].

Associated disease conditions displayed Sino nasal neglected mass was 63.64%, atrophic rhinitis 36.36%, malignant Sino-nasal mass 85.71%, and benign 14.29% in the present paper, carried out by the maximum researcher, Francesconi et al., Ramalho et al. and Gopalakrishnan et al. series and case report. Ranga et al. series showed atrophic rhinitis was 90.28%, rhinosinusitis 8.33%, and malignancy 1.39% against our proportion [8, 20, 28, 29].

Regarding treatment, we followed traditional conservative treatment was 63.64%, and endoscopic removal at 36.36% carried out by White et al., Sharma et al., Agrawal et al., and Popov study [12, 13, 30, 6]. They all treated the patient with traditional conservative treatment. But endoscopic removal was more suitable, satisfactorily, and beneficial to patients practiced by Ranga et al., Badia et al., and Tsang et al. series of study. Practically applying endonasal endoscopic techniques to managing nasal myiasis in Sino-nasal tumors is complicated and controversial [31, 32].

About the complication, 9.09% suffered from orbital cellulitis, and the other 90.91% recovered from nasal myiasis without complication held up by Swain et al. Eyigor et al. research paper [33, 34].

## Conclusion

Nasal myiasis is an unusual parasitic disease that occurs in adult and elderly poor villagers of tropical countries. Females are typical sufferers, yet socially they are disregarded even in the disease state. Maintenance of good hygienic living and early treatment facilities help to prevent nasal myiasis. Our conservative, traditional treatment management Justified significantly for the patient. The endoscopic procedure is applicable in whichever were needed, feasible, and durable.

## Reference

1. Baumgartner DL, Greenberg B (1984) The Genus *Chrysomya* (Diptera: Calliphoridae) in the New World. *J Med. Entomol* 21: 105-113.
2. Zumpt F (1965) Myiasis in man and animals in the old world. 1965; Butter. worths(London): 267.
3. P Hoyer, RR Williams, M Lopez, M Cabada (2016) Human nasal myiasis caused by oestrus ovis in the highlands of Cusco, Peru: Report of a case and review of the literature. Hindawi Publishing Corporation, Case reports in infectious disease 2016: 2456735.
4. Arora S, Sharma JK, Pippal SK, Sethi Y, Yadav A (2009) Clinical etiology of myiasis in E.N.T.: A Retrograde period-interval study. *Braz J Otolaryngol* 75: 356-361.
5. Ramalho JRO, Prado EP, Santos FCC, Cinta PPV, Pinto JA (2001) Nasal Myiasis: Case Report. *Brazilian Journal of Otorhinolaryngology* 2804: 581-584.
6. Popov CNE (1942) Myiasis of the Nose. *Archives of Otolaryngology* 1942: 112-116.
7. Badia L, Lund VJ, Vile bodies (1994) An endoscopic approach to nasal myiasis: *J Laryngol Otol* 108: 1083-1085.
8. Jiang C (2002) A collective analysis of 54 cases of human myiasis in China from 1995-2001. *Clin Med J (Engl)* 115: 1445-1447.
9. Uriate FJ, Eii SR (1997) Doctor, there are maggots in my nose. *J R Soc Med* 90: 634-635.
10. Aydin E, Uysal S, Akkuzu B, Can F (2006) Nasal Myiasis by fruit fly Larvae: A case report. *Eur Arch Otolaryngol* 263: 1142-1143.
11. Cifteiglu N, Altintas K, Haberal M (1997) A case of human Orotracheal myiasis caused by *Wohlfahrtia magnifica*. *Parasitol Res* 83: 34-36.
12. Zrria LW, Micheal WC, Richard JH (2015) Nasal Myiasis: A case report. *Ear, Nose & Throat Journal* 94: 1-2.
13. Sharma H, Dayal D, Agrawal SP (1989) Nasal Myiasis: Review of 10 years' experiences. *The Journal of Laryngology and Otolology* 103: 489-491.
14. Sherman RA, Roselle G, Bills C (2005) Healthcare-associated myiasis: Prevention and intervention. *Infect Control Hosp Epidemiol* 26: 828-832.
15. Soni NK (2000) Endoscopy in Nasal myiasis. *Trop Doct* 30: 225-227.
16. Kim JS, Seo PW, Kim JW, Go JH, Jang SC, et al. (2009) A nasal myiasis in a 76 -year-old female in Korea. *Korean J Parasitol* 47: 405-407.
17. Chung PR, Jung Y, Kim KS, Cho SK, Ree HI (1996) A human case of internal myiasis in Korea. *Korean J Parasitol* 34: 151-154.
18. Cho JII, Kim HB, Cho CS, Huh S, Ree III (1996) An aural

- 
- myiasis case in a 54-year-old male farmer in Korea. Korean J Parasitol 37: 51-53.
19. Joo CY, Kim JB (2001) Nosocomial submandibular infections with dipteran fly larvae. Korean J Parasitol 39: 255-260.
  20. Ranga RK, Yadav SPS, Gayal A, Agrawal A (2013) Endoscopic management of nasal myiasis: A 10 years' experience. Clin Rhinol Int J 6: 58-60.
  21. Barazi R, Dabbous H (2020) Nasal myiasis in the pediatric age group: Case report & review of the literature. Ann Clin Otolaryngol 5: 1040.
  22. Salmanzadeh S, Rahdar M, Maraghi S, Maniavi F (2018) Nasal Myiasis: A case Report. Iran J Public Health 47: 1419-1423.
  23. Serafim RA, Santo RBE, Mella RAF, Collin SM, Dops PD (2020) Case Report: Nasal myiasis in an elderly patient with Atrophic Rhinitis and facial sequelae of leprosy. Am J Trop Med Hyg 102: 448-450.
  24. Kuruvilla G, Albert RR, Job A (2006) Pneumocephalus: A rare complication of nasal myiasis. Am J Otolaryngol 27: 133-135.
  25. Han JU, Suk SH, I'm JS, Kim BY (2015) A case of cerebral infection patient. J Rhinol 22: 51-54.
  26. Al Jabr I (2015) Aural myiasis: a rare cause of earache. Case Rep Otolaryngol 2015: 219529.
  27. Singh I, Gathwala G, Yadav SPS, Wig U, Jakhar KK (1993) Myiasis in children: The Indian perspective. Int J Pediatr Otorhinolaryngol 25: 127-131.
  28. Francesconi F, Lupi O Myiasis (2012) Clin Microbiol Rev 25: 79-105.
  29. Gopalakrishnan S, Srinivasan R, Saxena SK, Shanmugapriya J (2008) Myiasis in different types of carcinoma cases in Southern India. Indian J Med Microbiol 26: 189-192.
  30. Agrawal RD, Ahluwalia SS, Bhatia BB (1978) The occurrence of Oestrus Ovis larvae in the nasal cavity of a woman. J Indian Men Assoc 70: 263.
  31. Tsang WS, Lee, DL (2009) Nasal Myiasis. The role of endoscopy. Ear Nose Throat J 88: 1250-1251.
  32. Samant S, Kruger E (2007) Cancer of the paranasal sinuses. Curr Oncol Rep 7: 147-151.
  33. Swain SK, Sahu MC, Baisakh MR (2018) Nasal myiasis in clinical practice. Apollo Med 15: 128-131.
  34. Eyigor H, Dost T, Dayanir V, Basak S, Eren IT (2004) A case of naso-ophthalmic myiasis. Kulak Burun Bogaz Intis Dreg 18: 371-373.

**Citation:** Delwar AHM, Mazumder JA, Rashid MS, Mustafa MG and Swamy KB (2021). Nasal Myiasis: A Neglect State. Journal of Medical & Clinical Research 6(1):377-381.

**Copyright:** ©2021 AHM Delwar. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.