

CASE REPORT

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Unnoticed freshwater leech as a hidden cause for recurring epistaxis: a case series and review of literature conducted at Tertiary Care Hospital Sikkim, North East India

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Abstract

Background While leeches as intranasal foreign bodies are not frequently encountered, they can be one of the causes of epistaxis. The aim of the study is to raise awareness among healthcare professionals about the possibility of patients from leech endemic regions presenting with epistaxis.

Case presentation We present a series of epistaxis cases due to intranasal leech infestation. In our series of 10 cases, there were 7 male and 3 female patients, aged between 2 and 53 years old. The duration of the complaint ranged from 1 to 5 weeks. All patients experienced with blood-stain nasal discharge or frank nasal bleeding at some point and most of them have a history of leech infestation from spring water as a local source. This article presents our approach to managing nasal leech infestation as epistaxis and outlines the precautionary measures taken for the retrieval of this living foreign body.

Conclusion Details of the history must be taken before concluding the diagnosis. Maintain a high index of suspicion of leech infestation as a hidden cause of epistaxis especially in patients coming from endemic areas.

Keywords Epistaxis, Leech infestation, Freshwater

Background

The name leeches (Jalaukas) was derived from ancient books (Susruta Samhita—Suœruta’s Compendium and Mahabharata) and is said to mean “having water as its home”; derived from jala meaning water and okas meaning home. Aryans (ancient Indo Iranians) borrowed the word for leech from aboriginals, in Sanskrit Jaluka, Sindhi Jaru, and Juku in Nepali [1]. The most common presentation of aquatic leech endoparasitism is nasal irritation with recurrent unprovoked epistaxis [2]. Nasal bleeding

typically happens when individuals consume water from leech-infested springs or bathe in stagnant streams and pools. Due to the painless nature of leech bites, infestation can go unnoticed until a warning symptom arises. The saliva of leeches contains hirudin, an inhibitor of thrombin in the clotting process, and substances similar to histamine that induce continuous bleeding through vasodilation [3]. While leech infestation is not commonly seen and not a common reason for epistaxis, detailed patient history and careful examination can raise suspicion for this condition. We have encountered a series of cases in our outpatient department, ranging from young children to adults, where epistaxis was found due to leech infestation.

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Methods

An observational study was carried out in our ENT outpatient department, where data from minor operation theatre procedures were collected. A total of ten cases involving nasal foreign bodies as a leech were recorded. Details history was obtained from each patient, including the duration of the complaint, the general living standards, and the source of drinking water. Anterior rhinoscopy and 0-degree endoscopic examination were performed after applying saline nasal drops and the 4% or 10% Xylocaine nasal spray to anesthetize the nasal mucosa as well as leech. Documentation of the leech inside the nasal cavity and the site of attachment were done for all the cases. Endoscopic removal was carried out for all cases in the minor operation theatre.

Case presentation

Case 1

A 2-year-old male baby was brought to the outpatient department after being referred from the paediatric department. The baby was experiencing blood stain nasal discharge off and on since the past 3 weeks. There were no other symptoms, and the prescribed medicine did not provide relief. Due to the difficulty of examining a young child, the initial local examination failed to locate the source of the nasal bleeding. The saline nasal drop was administered and waited for a few minutes. Upon re-examination, with considerable difficulty, some movement of a leech was observed in the right nostril. The leech was successfully removed using forceps after applying 4% xylocaine nasal packing.

Case 2

A 53-year-old male patient presented to the outpatient department with a complaint of off-and-on nose bleeding over the past 4 weeks. The patient also mentioned occasional discomfort and itching sensation at the back of his nose. Furthermore, the patient's source of drinking water is derived from a nearby stream. Although the nasal bleed from the right nostril was frequent in the initial few days, it eventually stopped later on by itself. Upon conducting an anterior rhinoscopy, it was observed that both nasal cavities were clear, except for the presence of blood crust in the right nostril area. During the nasal endoscopic procedure, a brownish-black foreign body in motion was observed in the nasopharyngeal region. Subsequently, after a nasal spray containing 10% xylocaine and packed with saline ribbon gauze leech was successfully detached from its attachment in the nasopharynx using forceps.

Case 3

The 5-year-old girl presented with recurrent unilateral epistaxis for 3 weeks. There was no medical history

suggestive of infection with her. Her parents took her to various clinics where she received medication, but her symptoms remained the same. Eventually, she was referred to our clinic for further evaluation. During a thorough examination, it was revealed that she had previously played in stream water in a rural area. Initial examination of the nose did not reveal the source of the bleeding, but upon conducting a nasal endoscopy after applying a local anaesthetic, a live leech was found at the back of the left inferior turbinate. After few attempts, with the help of forceps, the leech was successfully removed.

Other instances have experienced a similar narrative of playing or consuming water from the nearby spring within their community.

Results

In our series of ten cases, there were 7 males and 3 females, ranging in age from 2 to 53 years old. Each patient presented with a complaint of either blood-stained nasal discharge or frank nasal bleeding intermittently. Additionally, four patients reported nasal irritation and a sensation of a foreign body. The duration of symptoms ranged from 1 to 5 weeks. Leech removal was performed in all cases using a 0-degree rigid endoscope and Tellys nasal forceps after anaesthesia with either 4% or 10% xylocaine, along with saline nasal spray. All patients had access to drinking water from a local stream (Table 1 and Fig. 1).

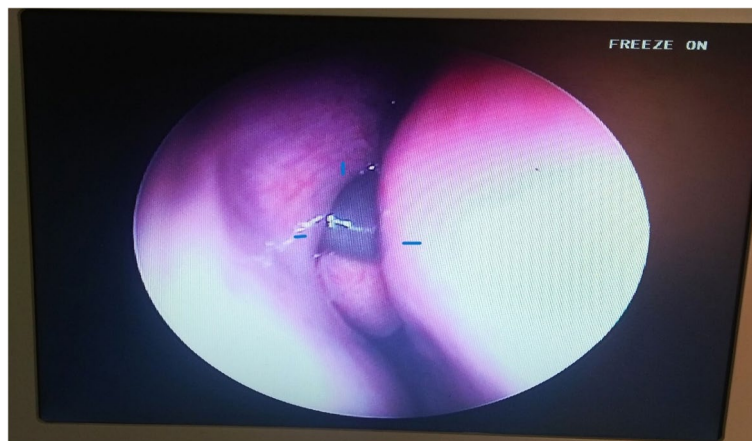
Discussion

Leeches are generally found in streams, ponds, and marshes. When water is drunk from these sources, leeches can infest the human and they can then be located anywhere in the upper respiratory tract from the nose to the larynx. Although nasal foreign bodies like leeches are uncommon, they can be one of the causes of epistaxis.

According to our observations, leeches can infest the nose at any age, and the majority of these infestations are found in rural areas where local springs serve as the primary supply of drinking water. Because Sikkim is a hilly region and the locals drink water straight from the springs with their hands cupped together, leeches can enter the nose very quickly and remain inside the nasal cavity due to their sucking ability. This was most likely the mode of infestation in every case in our analysis in the current series. There is a common practice of drinking water directly from freshwater streams in the Azad Jammu Kashmir and Hazara areas, as shown by all of them (38 cases) in their studies [4]. In another study done by [5] Raza SN et al. (2006), there were 12 cases (83.4%) in the first group had unsafe water drinking habits, i.e.

Table 1 Details list of the patients included in the present series

Sl. no	Age	Sex	History	Duration	Examination	Procedure
1	6	F	Drinking spring water	4 weeks	Below right middle turbinate	4% xylocain + saline + 0-degree endoscopic forceps removal
2	20	M	Drinking spring water	3 weeks	Posterior end of inferior turbinate	10% xylocaine spray + saline + endoscopic forceps removal
3	2	M	Drinking spring water	3 weeks	Right lateral nasal wall	4% xylocain + saline + 0-degree endoscopic forceps removal
4	5	F	Playing in stream water	3 weeks	Posterior end of left inferior turbinate	10% xylocaine spray + saline + endoscopic forceps removal
5	53	M	Drinking spring water	4 weeks	Right nasopharyngeal wall	10% xylocaine spray + saline + endoscopic forceps removal
6	40	F	Drinking spring water	1 weeks	Right posterior nasopharyngeal wall	10% xylocaine spray + saline + endoscopic forceps removal
7	52	M	Drinking spring water	2 weeks	Right middle meatus	10% xylocaine spray + saline + endoscopic forceps removal
8	18	M	Swimming local river	4 weeks	Right middle meatus	10% xylocaine spray + saline + endoscopic forceps removal
9	41	M	Bathing in local stream	4 weeks	Right middle meatus	10% xylocaine spray + saline + endoscopic forceps removal
10	16	M	Drinking	5 weeks	Left middle meatus	10% xylocaine spray + saline + endoscopic forceps removal

**Fig. 1** Endoscopic image of leech over the right middle meatus

they drank water directly from marshes without seeing its contents substituting cupped palm of hand for drinking. According to [6] De Brain Debrain (2013), leech infestation is frequently associated with unsafe water consumption habits, with the upper aerodigestive tract being commonly affected. The nose is the primary site of infestation (71%), often presenting with epistaxis as the main symptom. Other affected areas include the hypopharynx (14%), nasopharynx (7%), and oropharynx (7%) as reported by [5] Raza SN et al. (2006).

In our study, we found that the duration of leech infestation and the presentation of symptoms ranged from

7 to 35 days. This finding is similar with the study conducted by Sheikh Saadat et al. (2010), where the average duration of symptoms was 12 weeks with a standard deviation of 3.0. Another study by [7] Malaki O et al. (2010) reported a delay of 2 to 15 days between infestation and the onset of symptoms [8].

Although more than 700 species of leeches are reported globally, only 823 species are known to occur in India. The leech distribution and diversity of 82 species in India are as follows according to [9] Mandal et al. (2018). The Indian Himalaya alone harbours 40 species/subspecies belonging to 20 genera in 6 families which account



Fig. 2 Image of live leech after removal

for $\pm 58.82\%$ of the total Indian diversity of the leeches. According to the systematic list which was prepared on the basis of published literature, there are only 15 species recorded from North-East India, i.e. nine species are freshwater and six species are terrestrial. According to a study conducted by [9] Mondal et al. (2018), Sikkim is home to five different species of leeches. These species include *Dinobdella ferox*, *Hiruda Birmanica*, *Haemadipsa sylvestris*, *Haemadipsa montana*, and *Haemadipsa zeylanica montivindicis*. Among these species, *Dinobdella ferox* is the most common one that infests humans. This observation was also made in a study conducted by [8] Gangadharan S et al. (2005), which identified *Dinobdella ferox*, *Hirudinea granulosa*, and *Hirudinea viridis* as the common species that can infest humans.

Therefore, it is advised that clinicians maintain a high level of suspicion for leech infestation when dealing with cases of recurrent nasal bleeding in mountainous regions with tropical climates [5, 10]. Patients with lower socio-economic status or those living in rural areas having a history of drinking water or bathing in springs, natural wells, and lakes are commonly infected [11]. This finding aligns with the present series also.

Direct removal of leech might be difficult because of its powerful attachment to the nasal mucosa and because of its slimy and mobile body [3]. So various innovative techniques have been used for the removal of nasal leech infestation [12]. Adhakari P (2009) observed that the wait-and-watch policy (keeping the water in the kidney tray just below the nasal vestibule) is a better technique but it is more time-consuming. Other than this, various substances can be used to tranquilize leeches before removal. Irrigation with strong saline, vinegar, turpentine oil, or alcohol may be used for the removal of leeches [13]. It can also be detached by applying 30% cocaine, 1:10,000 adrenaline, or dimethyl phthalate [14]. Adrenaline or ephedrine can contract the nasal mucosa, which may weaken the adhesion of leech suckers in the

nasal cavity and help to remove leech. Irrigation with strong saline, vinegar, turpentine, or alcohol also helps to remove the leech [15]. In our study, we first administer the saline nasal solution and then, after few minutes, we apply either xylocaine 4% or 10% local nasal spray in the minor OT. We allow a few minutes for the xylocaine to take effect before proceeding with a 0-degree nasal rigid endoscopic examination and removal using Tellys's forceps. This approach effectively anaesthetises the nasal mucosa and facilitates the easy removal of the leech with forceps (Fig. 2).

Conclusion

Any individuals coming to the outpatient department with a history of bleeding from the nose must spend time for a details history before sending for other unwanted investigation. Nasal leech removal is a common outpatient department procedure and despite being a straightforward procedure, inexperienced healthcare providers may find leech removal challenging. This condition is closely related to unsafe water drinking habits; therefore, advising the community to drink boiled or filtered water from local sources can prevent and significantly reduce the incidence of this infestation. Therefore, a high level of suspicion is required when dealing with patients who have a history of drinking spring water from leech-endemic areas and are experiencing nosebleeds.

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Authors' contributions

CS and PS performed arrangement and writing up the materials, TJ collected the materials, and the SR did proofreading and correction.

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Availability of data and materials

It is available and all the material has been attached as table and figures.

Declarations

Ethics approval and consent to participate

No unethical means were used to obtain the material. The Head of Institute STNM Hospital Sikkim has given permission and consent for data collection and on publication. The manuscript is not sent to any other journal.

Consent for publication

Consent from the patients and the parent for the removal of foreign bodies and the use of the data for the study purpose and dissemination if necessary has been taken before the procedure.

Competing interests

The authors declare that they have no competing interests.

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References

- Mandal CK, Reynolds JW, Hasan MN, Deuti K (2022) Leech fauna of north-east India (Annelida: hirudinea). *Megadrilogica* 27(1):2
- Bhatia S, Gupta V, Sharma D (2019) Recurrent epistaxis: a diagnostic dilemma. *Rhinol Online* 16(2):112–114
- Pandey CK, Sharma R, Baronia A, Agarwal A, Singh N (2000) An unusual cause of respiratory distress: live leech in the larynx. *Anesth Analg* 90(5):1227–1228
- Sheikh Saadat Ullah W, Ullah S (2010) Nasal hirudiniasis-an unusual cause of epistaxis. 46–48
- Raza SN, Shabbir SM (2006) Leech infestation and its association with water drinking habits. *J Coll Physicians Surg Pak*. 16(3):175–8
- "Leeches" De Brain Debrain. Retrieved 21. 2013
- Maliki O, Aderdour L, Hassani R, Rouchdi Y, Nouri H, Raji A (2010) Leeches of the upper aerodigestive tract. *Rev Stomatol Chir Maxillofac* 111(4):193–195
- Gangadharan SK, Rajeshwari A (2005) An unusual foreign body in the nose. *Gujarat J Otorhinolaryngol*. 2:21
- Mandal CK, Paul P, Hasan MN, Bandyopadhyay PK (2018) One new terrestrial leech *Haemadipsa kaushiki* from West Bengal, India. *Intern J Adv Res Basic Engin Sci Techn (IARBEST)*. 4(1):12–8
- Chen WC, Chien CY, Yang CH, Li JH, Hwang CF (2010) Nasal leech infestation: report of seven leeches and literature review. *Eur Arch Otorhinolaryngol* 267:1225–1229
- Sarathi K (2011) Nasal leech infestation causing persistent epistaxis. *J Emerg Trauma Shock* 4(3):413–414
- Adhikari P (200) Nasal leech infestation in children: Comparison of two different innovative techniques. *Int J Pediatr Otorhinolaryngol* 73(6):853–5
- Bilgen C, Karci B, Uluöz Ü (2002) A nasopharyngeal mass: leech in the nasopharynx. *Int J Pediatr Otorhinolaryngol* 64(1):73–76
- El-Awad ME, Patil K (1990) Haematemesis due to leech infestation. *Ann Trop Paediatr* 10(1):61–62
- Hou N, Lv D, Zhao K, Xu XL, Yang WB, Wang Y (2021) A case of living leech in nasal cavity. *Otolaryngology Case Reports* 1(19):100277

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