

A LEECH IN THE NASAL CAVITY

Bestari Jaka Budiman SpTHT-KL, Yelvita Roza

Ear Nose and Throat-Head and Neck Surgery Department
Medical Faculty of Andalas University
Padang – Indonesia.

Abstract

Animate foreign body is a rare entity but common emergency presentation. The approach toward a patient with leech infestation comprises a thorough history and systematic examination followed by relevant investigation.

Leech infestation in the nasal cavity can cause a recurrent epistaxis, because there is a hirudin, a pure anticoagulant within the salivary gland. Till date, only few cases have been reported, but in a tropical region, leech infestation should also be considered an important cause for recurrent epistaxis.

Epistaxis caused by leech infestation sometimes difficult to diagnosed and managed through anterior rhinoscopy, so that the endoscopic evaluation of the nose could be helpful.

Here was presented a case of leech infestation in the nasal cavity of a 40 years old man which caused a recurrent epistaxis.

Key word: Leech infestation, recurrent epistaxis, hirudin

Abstrak

Benda asing hidup merupakan kasus yang cukup jarang terjadi, namun sering mengakibatkan kedaruratan. Pendekatan terhadap pasien dengan infestasi lintah meliputi anamnesis yang menyeluruh, pemeriksaan yang sistematis diikuti penyelidikan yang relevan.

Infestasi lintah di kavum nasi dapat mengakibatkan epistaksis berulang karena di dalam air liur lintah terdapat hirudin, suatu zat antikoagulan murni. Sampai saat ini hanya beberapa kasus telah dilaporkan, tetapi pada daerah tropis, infestasi lintah haruslah dipertimbangkan sebagai penyebab penting pada epistaksis berulang.

Perdarahan hidung yang disebabkan infestasi lintah kadang sukar untuk di diagnosis dan tatalaksana melalui rinoskopi anterior, sehingga evaluasi endoskopik pada hidung dapat membantu.

Dilaporkan suatu kasus infestasi lintah pada hidung seorang laki-laki berumur 40 tahun yang menyebabkan epistaksis unilateral berulang.

Kata kunci: infestasi lintah, epistaksis berulang, hirudin

INTRODUCTION.

Common causes of unilateral epistaxis in adults are benign or malignant tumor and deviated nasal septum. Parasitic infestation is a rare cause; leech infestation has not been mentioned as a cause of epistaxis in standard textbooks. But in country with tropical regions, leech infestation should also be considered as an important cause for unilateral epistaxis.^{1,2}

Epistaxis occurs in up to 60% of general population. Usually it is spontaneous and trivial, stops by itself or may be controlled with home remedies. However it could be massive and may be fatal.^{3,4}

Minor epistaxis usually unilateral and originates from the anterior nasal septum and is often the result of minor trauma to septal mucosa. It generally anterior origin but may also originate from the superior and posterior

nasal cavity. It can stop spontaneously, but conservative measures such as direct pressure (pinching the nose, nasal packing) and chemical cautery are usually successful in controlling this type hemorrhage, and surgical intervention is rarely necessary.⁵

Epistaxis results from the interaction of factors that damage the nasal mucosal lining, affect the vessel walls, or alter the coagulability of the blood and which may be categorized into environmental, local, systemic and medication related. Recurrent epistaxis is the most common symptom of patient with nasal leech infestation.^{1,3,6}

Leeches are blood-sucking hermaphroditic parasite, which varies in colour and length. The leech as a foreign body and parasite in the human respiratory tract occurs principally in the countries in the Mediterranean area, Africa and Asia. Leech infestation usually occurs

through contact with water containing leech when people are swimming or washing their faces in rural streams. People usually suffer from symptoms several weeks after the leech has entered their nasal cavities. The most common symptom is recurrent epistaxis, foreign body sensation, and nasal obstruction. Sometimes the patients could even find wriggling leech outside their nostril themselves or with the assistance of family member.⁷⁻¹⁰

Leech is annelids segmented worms with powerful clinging sucker at each end. Common species that can infest human are *Dinobdella ferox*, *Hirudinea granulose* and *Hiredinea viridis*. Leeches are generally found in puddles of water and streams. When water is drunk from these streams and from puddles, leeches can infest the human body, they can be located anywhere in the upper respiratory tract from nose to the larynx. They adhere to the mucosa with the anterior sucker and they live on blood here.¹



Figure 1. the leech recovered from nasal cavity.³

CASE REPORT.

A 40 years old man reported to the ENT outpatient department on January, 17th 2011 with the complaint recurrent right-sided nasal bleeding for 2 weeks. The bleeding was intermittent, 2-5 ml per episode and about 9-10 times a day. The bleeding used to stop spontaneously. There was an odd sensation of something creeping in the nose and slight occasional unilateral blockage since 3 days before admission. He came to general practitioner and was referred to Dr. M. Djamil hospital because of a suspect leech in his right-sided nasal cavity. The patient had a history of swimming in the pond 3 weeks before. There was no history of bleeding from the nose before, no history of trauma, no high blood pressure or bleeding disorder.

In ENT examinations, ear is in the normal limit. On anterior rhynoscope examination, at the right side, nasal cavity was narrow, inferior turbinate was edema, hyperemic. There was a blackish mobile mass attached to medial aspect of inferior turbinate, the leech retracted to cranial aspect when speculum was inserted, moved to

medial aspect of medial turbinate. Medial turbinate couldn't be evaluated. There was a clotting at septum wall, inferior turbinate with hyperemic pots. No active bleeding was detected. Left side nasal cavity was in the normal limit, and on posterior rhinoscopy no abnormalities was seen, also in the throat. It was concluded that there was an animate foreign body; suspect a leech in the right side nasal cavity. The first attempt to removal with nasal speculum and alligator forceps was failed because the mass retracted and disappeared.

Diagnostic nasal endoscopy with a 4 mm 0 degree endoscope was performed under topical anesthesia. A blackish brown mass was seen moving high up the septum and hidden behind the middle turbinate. Then a 10% lidocain spray was administered into the nasal cavity. The mass was removed with forceps after applying a 10% lidocain spray. It was a leech, black in colour, alive and measuring 5 cm in length and 0.5 cm in width.

Re-evaluation was performed. No other mass in the nasal cavity and throat, no active bleeding, no laceration. Middle turbinate was edema and hyperemic. Patient was discharged with oral antibiotics ciprofloxacin 2x500 mg.

DISCUSSION.

Foreign bodies in the nasal cavity can be categorized into animate foreign bodies and inanimate foreign bodies. The inanimate foreign bodies can be either organic or nonorganic. Among organic inanimate foreign bodies, endogenous materials such as bones or pieces of cartilages can be left behind following surgical intranasal interventions. Vegetable foreign bodies such as beans, nuts and seeds should be promptly removed since they will swell and putrefy. Nonorganic materials such as chalk, beads, drawing pins, pieces of rubber erasers, washers, eyelets, button, brass stud, sponges, corks, and cardboard discs have also been placed into the nasal cavity. One of the most dangerous nonorganic foreign bodies are button batteries. Batteries can rapidly corrode and cause extensive burning and necrosis of the nasal septum, turbinates and sinuses.²

Among the animate foreign bodies most medical text report nasal myiasis as the commonest cause of unilateral epistaxis. Myiasis is caused by the larvae of two-winged fly (dipteral) feeding on necrotic tissue. These parasites are also referred to as maggots. Several other studies have reported cases of leeches in the nasal cavity. Leech infestation has not been mentioned as a cause of epistaxis in standard textbooks. Only few studies in the literature have reported leech infestation as a cause of epistaxis.^{2,10-13}

Leeches are annelids belonging to the subgroup *Hirudinea*, vary in color and range in length from

millimeters to half a meter, they are cylindrical of leaf-like in shape, depending on the contraction of their bodies.⁹ They may black, brightly colored or mottled. They are hermaphrodites, but reproduce by cross-fertilization.

Those that attack man may be divided into two classes: land leeches and aquatic leeches, according to their habitats. Land leeches have a powerful jaws which can penetrate to the skin so that they can attach anywhere on the external surface of the body, and aquatic leeches which have weak jaws and require soft tissue, such as the mucosa of upper aero digestive tractus, to feed on.^{8,12-14} Hirudiniasis is the term used to indicate the invasion of the body cavity or infestation by leeches.^{2,9}

Aquatic leeches live exclusively in fresh water. They do not all require mammalian host, and can exist on amphibians. They can enter the nostrils or mouth during washing or drinking and can also attack conjunctiva, vulva, vagina and urethra in persons bathing in infested water.^{11,14} Observations have been reported in the nose, nasopharynx, oral cavity, and in the larynx, esophagus, and rectum also reported.^{9,15} Rahman MS (2006) reported one case of intestinal obstruction because of leech in the peritoneal cavity.¹⁶ The species *Dinobdella ferox* (ferocious leech or nasal leech) are known to invade the nasal cavity.^{2,9} However, leeches enter into nasal cavity when they are very small and the symptoms occur only when they grow large enough.¹⁵

The distribution of age in nasal leech infestation in view literatures varies between 3 to 65 years old, and rarely adult patients were reported. Recurrent epistaxis was the most common symptom and most patients had raw water contact history either in rural stream or in pond.⁸ In our case, the patient is 40 years old with the symptom recurrent unilateral epistaxis and history of swimming in a pond.

Leeches bite in a warm surfaces and has satiation last 12 to 18 month, during which time the leech avoids warm surfaces and will not bite^{2,8,10}



Figure 2. A leech taken from the nasal cavity of our patient

In 1884, Haycraft discovered a chemical present within the salivary gland of leech called hirudin, which is a pure anticoagulant that inhibits the conversion of prothrombin to thrombin and allows a wound to ooze for long period of time. Leech also secrete hyalurodinase and antihistamines that have the added benefit of allowing anticoagulant to spread throughout the wound and for vasodilatation and anesthesia to occur, that's why the wound caused by the leech is not painful.^{13,17} It similar to our patient, he didn't complain any pain in his nose since the leech infest into.

A leech has two acetabulum which are located at the anterior and posterior end of body. Leeches usually inhabit freshwater and live by sucking blood of body fluid. They have three toothed jaws which protrude through their mouth and make typical Y-shaped wound on the skin of mucosa.¹³ The host's blood is then pumped from the mouth to the crop by rhythmic contractions of the pharynx. The leech will feed until gorged, which takes about 20 min, and each feed relieves the host 5-8 ml of blood. An additional of blood may be lost from the wound because of anticoagulant effect. Blood as digested through a symbiotic relationship between the leech and its gut flora. Leeches have no proteolytic gut enzymes and rely on *Aeromonas hydrophila* (a constituent of their gut flora) to denature ingested hemoglobin. Leeches use the globin and the bacteria use the haem.¹⁸ An adult leech can ingest ten times it's body size in blood and the bite wound can bleed for several hours¹³. However, in our patient it's only a few bleeding and periodically. When we removed the leech, the bleeding didn't flow out from the bite site. Only hyperemic pots left.

Because leech bite are painless, the infestation remains symptomless until a warning sign appears.^{10,13} When a leech is present in nasal cavity, patient may present with epistaxis, nasal obstruction, and the sensation of moving foreign body in the nasal cavity. It can enter the maxillary sinus through the natural or a surgically created ostium and then they can be very difficult to remove.^{2,9,13} They become dislodged from nasal cavity and entered the subglottic area causing cough, hoarseness, hemoptysis or dyspnea.^{2,13}

The major complication is anemia due to blood loss. Other complications like airway obstruction or wound infection were also reported. Serious complications, including death may occur in children with multiple infestation.^{8,19} A leech's normal gut flora includes *Staphylococcus spp*, *A. hydrophila*, *pseudomonas spp*, and other Gram negative rods. Infections secondary to *A. hydrophila* colonization of necrotic tissue have been reported up to 10 days of infestation. Sepsis, pneumonia and gastroenteritis are hallmarks of aeromonas septicemia toxemia syndrome.¹⁸

Antibiotic treatment is directed toward the leech gut microflora, primarily *A hydrophila*. Recommendations for antibiotics that give adequate cover include gentamicin, ciprofloxacin, tetracycline and co-trimoxazole.¹⁸ In this case, we give our patient ciprofloxacin 2x500 mg orally to protect secondary effect of leech infestation.

Epistaxis because of nasal leech infestation occur because of the continuous bleeding from capillary, effect of the histamine like substance from leech's saliva, and because of hirudin, which inhibits thrombin in the clotting process.¹ The source of the bleeding could be anywhere, depend on the site of attachment, it can cause a diagnostic dilemma because every corner of the nasal cavity cannot be visualized easily and the leech inside the nose may retract to the areas which difficult to visualize during anterior rhinoscopy.^{1,12}

Diagnosis is easy when leeches are shown in the nasal cavity. When anterior rhinoscopy are not sufficient and inspection with endoscope is usually necessary. However, when it's dislodged in the nasopharynx, examination of the patient under general anesthesia may be required, especially in small children. In this location a differential diagnosis with other nasopharyngeal lesion, such as juvenile nasopharyngeal angiofibroma, anthrocoanal polyp, malignant tumor, is necessary. However, as an edoparasite, the leech can cause serious, even lethal, complication, through it is rare. The leech can stimulate the symptoms of nasopharyngeal neoplasm, such as juvenile nasopharyngeal angiofibroma or nasal polip.¹⁴

Misdiagnosed can occur when CT images was performed, some nasal polyp were found and computer tomography was arranged under impression of chronic rhinosinusitis. There for otolaryngologist should pay special attention to patients who have presenting these symptoms and who have a history of recent contact with fresh water lakes or streams. The diagnosis of a leech as a foreign body may be confirmed after extraction and identification of its species.^{12,14,15} The leech from our patient was confirmed to the Parasitology department. It was a *Dinobdella* subgroup.

Since a leech attaches strongly with its suckers, and because of its soft and slippery body surface which ruptures easily, it is difficult to hold and remove a leech with force.^{13,14,15} When a patient is diagnosed with nasal leech infestation, we should remove the leech as soon as possible. Many ways to remove nasal leech are reported, but there is currently no standard procedure.⁸ Firm traction should not be used to detach a leech, because this can leave some of the mouth parts behind, leading to persistence of bleeding and secondary infections. Detachment of a leech can be achieved by topical spraying solutions to tranquilize the leech or relieve pain as the leech being removed such as 30% cocaine, 1:10.000 adrenalin, or dimethyl

phthalate.^{8,10} Respiration by the leech takes place through its body wall. It can be paralyzed with anesthetic agent. The suffocation caused by anesthetic agents causes the leech to migrate toward the surface and it also makes the attachment of the leech to the mucosa weak, so that it can be removed easily.¹ Ghimire et al. and Bhandari JS suggest the use of topical anesthesia such 10% lidocaine spray to paralyze the leech before its removal.^{1,2,14} it was proved in our patient, the leech was failed to removed by forced of forceps, but it could be removed easily after a 10% lidocaine was being performed.

Another method is irrigation with strong saline, vinegar, turpentine or alcohol. However, these topically applied agents may lead to mucosal edema and tissue damage. Tseng and Ho ever successfully removed nasal leeches with direct injection of 4% lidocaine solution into the leech.¹⁰ This maybe an effective method but the leech must be large enough to be precisely injected with needle. Small leech are not suitable for this method.⁸

Adhikari P offer an innovative techniques for removal the leech by wait and watch policy by keeping water in kidney tray just 1 cm below the vestibule. As soon as the leech was seen in the nasal vestibule coming towards the water, they were caught with artery forceps.¹³

After removal of the nasal leech, a secondary look including the nasal cavity and oropharynx is very important due to multiple leeches and migration being possible.⁸ in our patient, there was only one leech in the nasal cavity, and no dislodged to nasopharynx or oral cavity.

Removal the leeches from the larynx can be performed by direct laryngoscope with the patient under general or topical/local anesthesia.^{9,12,14,17}

In conclusion, nasal leeches should be included in differential diagnosis of patient with recurrent epistaxis and nasal congestion, especially patients with a history of immersion in muddy-bottomed rivers or ponds. Leeches can be paralyzed with topical anesthetics and then extracted immediately, as in this case. Cases such as this should be considered as emergencies, and all measures should be taken to avoid epistaxis and severe anemia.¹⁹

After removal of the leech, inspecting the entire nasal cavity and oropharynx again thoroughly is important because other leeches may be missed.⁸

REFERENCES

1. Ghimire A, Acharya A. unusual cause of unilateral epistaxis: Nasal leech infestation. JNMA J Nepal Med Assoc. 2008 Jan - Mar; 47 (169): 38-40
2. Bhandari JS. Intranasal leech foreign body: Endoscopic removal of intranasal Leeches. World Articles in ear, nose and throat. Vol 3 -1.(Cited 2011

- Jan 17). Available from:
<http://www.waent.org/F:/nose-leeches>.
3. Kucik CJ, Clenney T. Management of Epistaxis. *American Family Physician*. 2005; 71(2): 305-11.
 4. Hussain G, et. Al. evaluation of aetiology and efficacy of management protocol of epistaxis. *J. Ayub Med. Coll Abbottabad* 2006; 18(4): 62-5
 5. Snyderman CH, Carrau RL. Expert Consult: Epistaxis. (cited 2009 Sept 15):(about 21 p) Available from:
<http://www.expertconsultbook.com/expertconsult/b/book.do?method=g>
 6. Shin AJ, Murr AH. Managing Epistaxis. *Otolaryngology & Head and Neck Surgery*. 2008;8:37-42
 7. Uygur K, Yasan H, Yavuz L, Dogru H. Removal of a laryngeal leech: A safe and effective method. *Am J Otolaryngol*. 2003 Sept-Oct; 24(5): 338-40
 8. Chen WC, Chien CY, Yang CH. Nasal leech infestation: report of seven leeches and literature review. *Eur Arch Otorhinolaryngology*. 2010; 276:1225-9
 9. Kaygusuz I, Yalcin S, Keles E. Leeches in the larynx. *Eur Arch Otolaryngology*. 2001; 258:455-7
 10. Tseng CC, Ho CY. Removal of a nasal leech: A safe and effective method. *Otolaryngol Head and Neck Surgery*. 2005; 132: 814-5
 11. Satyawati, Singhai SK, Dass A. Multiple live leeches from nose in a single patient - rare entity. *Indian Journal of Otolaryngology and Head and Neck surgery*. 2002; Apr - June; 54(2) : 154-5
 12. Saki N, Rahim F, Nikaghlagh, saki G. Meta analysis of the leech as a foreign body: Detection, precaution and Treatment. *Pakistan journal of Biological Sciences*. 2009. 12(24): 1556-63
 13. Adhikari P. Nasal leech infestation in children: Comparison of two different innovative techniques. *International Journal of Pediatric Otorhinolaryngology*. 2009; 73:853-5
 14. Fooanant S, Puntasri W, Manorot M, Niwasabutra S. A leech in the nasal cavity. *Chiang Mai Med Bull*. 2006; 45(1): 27-30.
 15. Bilgen C, Karci B, Uluoz U. A nasopharyngeal mass: Leech in the nasopharynx. *International Journal of Pediatric otorhinolaryngology*. 2002; 64:73-6
 16. Rahman MS. Leech in the peritoneal cavity: An Unusual cause of intestine obstruction. *The ORION medical Journal* 2007 Jan; 26:443-4
 17. Taneja P, Rowson J. National survey of the use and application of leeches in oral and maxillofacial surgery in the United Kingdom. *British Journal Oral and Maxillofacial Surgery* (article in press).2010 (cited 2011, January 23);YBJOM-3418: (about 4 pages). Available from:
<http://www.sciencedirect.com>
 18. Whitaker IS, Kanya C, Azzopardi EA, Graf J, Kon M, Lineaweaver WC. Preventing infective complications following leech therapy: is practice keeping pace with recurrent research? *Wiley InterScience*.2009.(cited 2011 January 23).DOI(about 6 pages). Available from:
<http://www.interscience.wiley.com> . DOI 10.1002/micr.20666
 19. Mohammad Y, Rostum M, Dubaybo BA. Laryngeal hirudiasis: An unusual cause of airway obstruction and hemoptysis. *Pediatric Pulmonology* 2002; 33:224-6