

Severe Anemia by a Leech Infestation in a Pediatric Patient: A Case Report

Authors: D. Rutagumba^{1,*}; B. Niyoyita¹; R. Nyirasafari²

Affiliations: ¹University of Rwanda, Kigali, Rwanda; ²Rwanda Military Hospital, Kigali, Rwanda

ABSTRACT

CASE PRESENTATION: We report a case of a five-year-old female patient who presented to the Rwanda Military Hospital for left ear foreign body. She had a background of hematemesis and body weakness and was found to have severe anemia. The anemia resolved after a blood transfusion and vomiting of a leech parasite.

DISCUSSION: Leeches are rare parasites that can cause life-threatening anemia. Leeches are transmitted by using unfiltered infested water through bathing or drinking or while swimming in contaminated water. Although leech infestation is a rare cause of severe anemia, it should be considered as a possible cause of hematemesis, vaginal, or gastrointestinal bleeding.

Keywords: Leech, Infestation, Anemia, Case Report

INTRODUCTION

Anemia in children is a common worldwide problem which can have serious consequences. Anemia due to active bleeding in the upper respiratory tract or in the gastrointestinal system can be life-threatening. Previous case reports have described cases of anemia associated with leech infestation in children [1,2]. Leeches are hermaphroditic endoparasites which nourish on host blood and live in contaminated water. Leeches vary in color and in length, ranging anywhere from a few millimeters to half a meter [3].

Leech infestation occurs through drinking non-clean infested water from streams, pools, dam, and springs [3]. Leech bodies are composed of thirty-four segments. They attach to their hosts by two muscular suckers, called the anterior and posterior sucker. Leeches then can use three teeth inside their anterior sucker for biting and the posterior sucker is used for leverage [4]. The amount of blood feed can reach up to ten times the leeches body weight [5,6].

The leeches have mechanisms which allow them to continuously receive nourishment from their host without being noticed. They have an anesthetic product in their saliva that reduces the sensation felt by the host. In addition, leech saliva contains a va-

sodilator that causes the blood vessels near the leech to become dilated, and thus provides the leech with a bleeding supply that can reach 150 ml of blood within 48 hours which can cause patients infested to develop severe anemia due to this significant blood loss [7]. Hematophagous leeches are able to attach to their host until when they are full, that is when they will fall and start digestion [5,7].

Leeches can present on the mucosa of the oropharynx, nasopharynx, tonsils, esophagus, nose, trachea or vagina, but rarely in the rectal mucosa. In rare cases, the leech can also be the cause of upper airway obstruction [2,8–10]. The clinical presentation of leech infestation depends on the exact site of the infestation. The nose, especially lateral and medial nasal walls of the nose, and the vagina are the most common sites of living leech infestation. Epistaxis is the most common presenting clinical symptom [10]. Depending on the site of infestation, hematemesis, epistaxis, vaginal bleeding, signs of upper airway obstruction, all these may occur [1]. In our patient, the presenting features include hematemesis, weakness, pallor and severe anemia.

The removal of the leech requires significant attention because of its tight attachment. Removal usually require endoscopic or laryngoscopy-guided removal under general anesthesia [12]. Internal attachment, such as the vagina is more likely to require medical

***Corresponding author:** Dr Dieudonne RUTAGUMBA, CMHS/UR, Email: rdodos2020@yahoo.fr; **Potential Conflicts of Interest (Col):** All authors: no potential conflicts of interest disclosed; **Funding:** All authors: no funding was disclosed; **Academic Integrity.** All authors confirm that they have made substantial academic contributions to this manuscript as defined by the ICMJE; **Ethics of human subject participation:** The study was approved by the local Institutional Review Board. Informed consent was sought and gained where applicable;

Originality: All authors: this manuscript is original has not been published elsewhere; **Type-editor:** Ahmed (USA)

Review: This manuscript was peer-reviewed by three reviewers in a double-blind review process;

Received: 23rd Sept 2019; **Initial decision given:** 10th Oct 2019; **Revised manuscript received:** 18th Nov 2019; **Accepted:** 21st Nov 2019

Copyright: © The Author(s). This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY-NC-ND) (click here) which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. **Publisher:** Rwanda Biomedical Centre (RBC)/Rwanda Health Communication Center, P.O.Box 4586, Kigali.

ISSN: 2079-097X (print); 2410-8626 (online)

Citation for this article: D. Rutagumba; B. Niyoyita; R. Nyirasafari. Severe Anemia by a Leech Infestation in a Pediatric Patient: A Case Report. Rwanda Medical Journal, Vol. 77, no. 2, pp. 34-36, 2020.

intervention [11]. For induction, a sevoflurane-oxygen mixture via facemask is used. The leech is paralyzed and detached from its attachment by sevoflurane. Blunt jaw forceps are preferable for removal. Hirudin, an anticoagulant enzyme released by salivary glands of leeches, can continue to cause blood loss, and therefore, the entirety of the leech's body should be removed. Direct endoscopy is the gold standard to obtain an emergency diagnosis and to remove the leech [4].

Though the following case is unusual cause of life threatening anaemia, it should be considered in differential diagnosis of anaemia especially in poor settings.

CASE PRESENTATION

History: A 5-year-old female child presented to Rwanda Military Hospital (RMH) from a district hospital. She was referred to pediatric department with a two-week history of foreign body (stone) in her left ear. Her parents had delayed to consult because they thought the stone would come out by itself. They decided to seek medical care when they saw a purulent discharge from the left ear.

On review of system, it was reported that the child had developed a new-onset of vomiting gastric content mixed with fresh blood, five days prior to the consultation, associated with fatigue. She also reported mild headache and abdominal pain, but there was no diarrhea, no fever, no constipation, no hematochezia nor melena. She was previously healthy, and the past medical history was unremarkable. She lives in a rural area in the eastern province of Rwanda and comes from a family with poor socio-economic level. Her mother reported that the child sometimes drank unsafe water from a dam near their home.

Physical examination: On physical examination at admission, she was noted to be a well-nourished child with normal anthropometric measures plotted on the WHO curves weight: 17kg, Height: 105cm, with weight-for-height 0 z-score, and height-for-age $1 < HA < 0$. She was asthenic, had a temperature of 37.0°C , was tachycardic with a heart rate of 135 beats per minute, the capillary refill time was below two seconds, and the extremities were warm. She had tachypnea with respiratory rate of 28 cycles per minute and oxygen saturation of 97% on room air. She had severe conjunctiva and palmo-plantar pallor, purulent discharge in the left ear canal and we were not able to visualize the tympanic membrane because of pus in the external ear canal. There was no lymphadenopathies, no hepato-splenomegaly, no petechiae and no bruises. The rest of the physical exam was unremarkable.

Investigations: The initial Full Blood Count (FCB) showed severe normocytic anemia with a hemoglobin was 3.4g/dl and mean corpuscular volume of 96.2 fl. The rest of her FBC was normal. The C-reactive protein was 35.7mg/dl, and the malaria smear was negative.

Management: The patient had a clinical picture of significant anemia, and was treated with a transfusion of Packed Red Blood cell (PRBCs) at two consecutive sessions at 10 ml/kg over slow

infusion. The Ear, Nose and Throat (ENT) department was consulted and the patient was scheduled for foreign body removal the following day. Meanwhile the patient was given neomycin ear drops. Twelve hours into her hospital stay the child vomited a brown moving parasite found to be a leech (Figure 1). After vomiting this parasite, hematemesis stopped and there was no other episode of vomiting. After blood transfusion, the fatigue resolved, the vital signs normalized, and the child became playful as usual.



Figure 1: Vomited leech with dark brown color

She was then sent to the Endoscopic department for exploration and removal of any other possible remaining parasites. The upper GI endoscopy (checked oropharynx, esophagus, stomach and duodenum) was done on day three of admission and fortunately the endoscopic exam revealed no other parasites, no varices and there was no gastric or duodenal ulcers, nor stenosis. The nose and nasopharynx were not endoscopically examined for leeches. On the fifth day of admission the patient was then reviewed by an ENT surgeon and the small stone was removed from the left external ear canal and a washout performed. After six days in hospital (three days after vomiting the leech), the FBC was repeated with a satisfactory hemoglobin level of 10.3g/dl. The patient was discharged after seven days in hospital and was given an appointment to come back after one week but she did not attend.

DISCUSSION

Apart from being rare and affecting poor rural patients, anemia associated with leech infestation can easily be mistaken for another cause. It can be mistaken for upper GI bleeding like peptic ulcer disease, or esophageal varices when it affects the upper GI whereas when it affects the respiratory system can be thought to be foreign body, or even other wide range of causes of upper airway obstruction. These challenges in diagnosis have been described in previous case reports [11,13,14].

The leech may also present as bleeding disorders such as platelet disorder or coagulation factors dysfunction as described in previous case report [8,10,15], but the difference exists on presence of isolated anemia in leech infestation induced anemia due to blood loss, whereas if the anemia is associated with other causes abnormal parameters will be found. Another indicator to ensure that it is the leech induced bleeding not something else, the bleeding will stop after the parasite is removed either spontaneously or by medical

intervention [15]. Our case also presented as upper GI bleeding, with clinical and biological findings of anemia and bleeding stopped after the parasite was vomited.

Most previous case reports have described leech infestation to be common in rural areas [6,13,16]. To the best of our knowledge, this is the first case to be reported in Rwanda and could not be used as reference to understand the epidemiology and characteristics of leech infestation in Rwanda rather this can serve as a reminder to clinicians and researchers in this setting.

Hygiene education and improved sanitation infrastructure are the key to preventing this rare but potentially life-threatening complication of drinking unsanitary water [17]. In our case, the child came from a poor family living in a rural area, requiring them to drink and to bath in unclean water from a dam nearby their home, which is thought to be the source of this leech parasite.

REFERENCES

- [1] M. Taşkesen, S. Katar, and H. Başçık, "An unusual cause of gastrointestinal bleeding and severe anemia in a child: Leech infestation," *J. Trop. Pediatr.*, vol. 55, no. 5, pp. 338–339, 2009.
- [2] A. Hossein, J. Rouhi, S. Vegari, S. S. Vahdati, and D. Porhosein, "Nasopharyngeal Bleeding due to Leech Bites in a 9-month-old Infant," *Indian J. Pediatr.*, vol. 77, pp. 573–574, 2010.
- [3] D. Mekonnen, "Leech infestation: the unusual cause of upper airway obstruction," *Ethiop. J. Health Sci.*, vol. 23, no. 1, pp. 65–68, 2013.
- [4] S. N. S. Shibabaw, "Severe anemia due to pharyngeal leech infestation ; a case report from Ethiopia," *BCM Surg.*, pp. 1–3, 2017.
- [5] M. A. Behçet AL, Mehmet Emin YENEN, "Rectal bleeding due to leech bite : a case report," *Turkish J. Trauma Emerg. Surg.*, vol. 17, no. 1, pp. 83–86, 2011.
- [6] N. Saki, F. Rahim, S. Nikaghalagh, and G. Saki, "Meta analysis of the Leech as live foreign body: Detection, Precaution and Treatment," *Pakistan J. Biol. Sci.*, vol. 12, no. 24, pp. 1556–1563, 2009.
- [7] N. Shitaye and S. Shibabaw, "Severe anemia due to pharyngeal leech infestation; A case report from Ethiopia," *BMC Surg.*, vol. 17, no. 1, pp. 1–3, 2017.
- [8] A. Hossein et al., "Nasopharyngeal Bleeding due to Leech Bites in a 9-month- old Infant," *J. Trop. Pediatr.*, vol. 77, no. 5, pp. 573–574, 2010.
- [9] M. Saha and S. Nagi, "Intraperitoneal leech: A rare complication of leech bite," *J. Indian Assoc. Pediatr. Surg.*, vol. 16, no. 4, p. 155, 2011.
- [10] A. Muhammad Ashraf, Ruqia Fida, Muhammad Ishaq,

CONCLUSION

Leech infestation is rare but can happen especially in rural areas. Its effects can be severe enough to cause severe anemia, hence it should be considered in the differential diagnosis amongst the causes of unexplained internal bleeding and upper respiratory tract obstruction. History taking should focus on the circumstances surrounding suspicion of leech infestation. Prevention of this disease can be promoted by teaching patients about the necessity of using and consuming clean, sanitized water. Researches are needed to learn more about these parasites in Rwanda.

INFORMED CONSENT: Verbal informed consent was obtained from the mother of the patient for publication of this case report and the image used in the case.

This case report has been described using CARE checklist [18].

Israr Ahmed Akdund, "Leech infestation in upper respiratory tract," *Medical Channel*, vol. 19, no. 2, pp. 60–62, 2013.

[11] M. Rafeey and Y. Jabbari-Mogaddam, "Intermittent gastrointestinal bleeding in a child: Leech infestation," *Iran. J. Pediatr.*, vol. 22, no. 4, pp. 572–573, 2012.

[12] M. J. Hannan and M. M. Hoque, "Leech infestation in children through body orifices: Experience in a hospital in bangladesh," *World J. Surg.*, vol. 36, no. 9, pp. 2090–2092, 2012.

[13] C. Krüger, I. Malleyeck, and O. H. E. Olsen, "Aquatic leech infestation: A rare cause of severe anaemia in an adolescent Tanzanian girl," *Eur. J. Pediatr.*, vol. 163, no. 6, pp. 297–299, 2004.

[14] B. B. A. Estambale, R. Knight, and R. Chunge, "Haematemesis and severe anaemia due to a pharyngeal leech (*myxobdella africana*) in a kenyan child: A case report," *Trans. R. Soc. Trop. Med. Hyg.*, vol. 86, no. 4, p. 458, 1992.

[15] H. Ağin, F. Y. Ayhan, G. Gülfıdan, D. Çevik, and H. Derebaşı, "Severe Anemia Due to the Pharyngeal Leech *Limnatis nilotica* in a Child," *Turkish Soc. Parasitol.*, vol. 32, no. 3, pp. 247–248, 2008.

[16] Tesmegen Kelaye, "Assessment of Prevalence of Exclusive Breast Feeding Practice and Associated Factors among Under Six-Month-Old Children Selected Woreda South Nation Nationality of People Regional State ," *J. Nutr. Food Sci.*, pp. 1–7, 2017.

[17] T. Temesgen and T. Tilahun, "CASE REPORT Vaginal Leech Infestation : A Rare Cause of Hypovolumic Shock In Postmenopausal Woman," *Ethiop. J. Health Sci.*, vol. 25, no. 5, pp. 377–380, 2015.

[18] C. Case Report guidelines, "CARE Checklist of information to include when writing a case report," 2016.