

CASE REPORT

Prolonged Bleeding due to Hirudotherapy (Medicinal Leech Therapy)

ISA MH, LIM KHY, ABD-SAMAT AH

Department of Emergency Medicine, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia

ABSTRAK

Terapi lintah adalah sejenis perubatan tradisional yang telah lama diamalkan dan semakin popular sejak kebelakangan ini untuk pelbagai penyakit dan aplikasi pembedahan. Walau bagaimanapun, air liur dari lintah mengandungi protein dengan sifat antikoagulan yang boleh mengakibatkan pendarahan yang berpanjangan di kawasan gigitan. Kami melaporkan kes seorang lelaki berusia 35 tahun yang datang ke Jabatan Kecemasan kerana pendarahan yang berlarutan daripada kesan luka gigitan lintah. Beliau tidak mempunyai sejarah perubatan atau pengambilan ubatan yang lain. Beliau menjalani terapi lintah untuk merawat sakit belakang kronik. Selepas terapi, beliau menyatakan bahawa pendarahan tidak berhenti selepas 7 jam dan memutuskan untuk mendapatkan rawatan di hospital. Terdapat luka di bahagian belakang dan kedua-dua kakinya. Semua lukanya bersih tetapi luka di belakang masih berdarah. Ubat adrenalin digunakan sambil memberi mampatan atas luka dan akhirnya pendarahan semakin berkurang dan berhenti. Terdapat banyak kaedah yang dicadangkan untuk menghentikan pendarahan tetapi tiada bukti mengenai kelebihan mana-mana kaedah. Ini adalah laporan kes pertama mengenai komplikasi terapi lintah di Malaysia. Laporan kes ini adalah untuk meningkatkan kesedaran di kalangan pengamal terapi lintah, staf bahagian perubatan kecemasan dan orang awam mengenai komplikasi dari gigitan lintah. Kami juga mencadangkan penggunaan adrenalin topikal sebagai alternatif untuk membantu menghentikan pendarahan daripada luka gigitan lintah.

Kata kunci: adrenalin, lintah, pendarahan

ABSTRACT

Medicinal leech therapy is a form of complementary medicine that has long

Address for correspondence and reprint requests: Lim Kristina Hoong Yew. Department of Emergency Medicine, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia. Tel: +6012-2860279 Email: mystics_hy@hotmail.com

been practised and is gaining popularity in recent years for various illnesses and surgical applications. However, leech saliva contains proteins with anticoagulant properties that can lead to prolonged bleeding from the bite area. We report a case of a 35-year-old male who presented to the Emergency Department due to prolonged bleeding from a leech-bite wound. He did not have any significant past medical history or medication history. He had undergone medicinal leech therapy for chronic back pain. After the therapy, he noted that the bleeding did not stop after 7 hours (which normally stops within 30 minutes) and decided to seek treatment. There were wounds over his lower back and both feet, which were all clean. The wound over the lower back had persistent oozing. We applied topical adrenaline and manual compression on the wound, and eventually the bleeding reduced and stopped. There are many suggested methods to stop bleeding from leech-bite wounds but there is scarcity of evidence regarding the superiority of any method. This is the first case report regarding bleeding complications in medicinal leech therapy in Malaysia. This report aims to raise awareness regarding the complications arising from a leech bite among the practitioners of medicinal leech therapy, the public and healthcare providers in emergency facilities. We also suggest using topical adrenaline as an alternative to help stop bleeding from leech-bite wounds.

Keywords: adrenaline, hemorrhage, leeches

INTRODUCTION

Leeches are segmented, hermaphrodite worms found in freshwater areas. There are certain species among them which are sanguivores-bloodsucking creatures. Leeches have 2 sucker parts, on their anterior and the posterior, respectively, which are used for adherence and creeping (Figure 1). Leeches usually bite warm parts of the body and suck the blood of its prey (Joslin et al. 2017). Although most bites are external, there have been multiple case reports regarding leech bites internally in the rectum, bladder, and vagina. For each feeding, the leeches may suck up to 10-15 ml of blood over 20-30 minutes. Most leech bites occur

in the wilderness; however, it may also occur intentionally during medicinal leech therapy (hirudotherapy) which is a form of complementary medicine (Joslin et al. 2017).

Medicinal leech therapy has been used since ancient Egyptian times. Although there is no substantial evidence regarding their effectiveness, leech therapy has been experimented on as a treatment to many forms of illnesses such as inflammatory diseases, osteoarthritis and deep vein thrombosis. Leech therapy has also been used for plastic and microsurgical applications. The basis for the therapy lies in the properties of the leech saliva, which contains analgesic, anti-inflammatory and antimicrobial



Figure 1: (A) Leeches found in Lembah Danum, Sabah (B) Picture shows a leech adhering on a surface with its sucker. Photographs courtesy of Chai and Kaharuddin.

properties (Sig et al. 2017).

However, medicinal leech therapy has its own risk. Leech saliva contains antiplatelet and anticoagulant molecules to prevent clot formation, which is important for the leech to suck blood from its prey. The main molecule is hirudin, which inhibits thrombin and leads to prolonged bleeding at the bite site even after the leech has released itself (Sig et al. 2017).

We present a case of medicinal leech therapy complicated with prolonged bleeding. To date, we were not able to find any case report regarding complications arising from medicinal leech therapy in Malaysia after searching through the literature using PubMed.

CASE REPORT

This is a case of a 35-year-old male who had received medicinal leech therapy to treat his chronic back pain and gout. He presented to the Emergency Department (ED) on the same day

of receiving the therapy because of persistent bleeding from his wounds for 7 hours. He denied experiencing any pain over the wounds and did not apply any ointment to the wounds. This was his second time undergoing the therapy; he did not experience any complications during the first encounter. He had no significant past medical history and was never diagnosed with any bleeding disorder. He was not on any antiplatelet or anticoagulant, and there was no family history of a bleeding diathesis.

On examination, he had one wound over his lower back at the sacral region, one on the dorsum of his right foot and two wounds on the ankle area of his left foot. The wound on the lower back was actively oozing, whereas the ones on his feet had stopped. All the wounds were clean; there was no swelling or redness around the wounds. The patient was clinically pink, and his vital signs were stable. Other systems' examination was unremarkable.

While the patient was in the ED,

we cleaned his wounds with sterile gauze and normal saline solution. We applied manual pressure to the bleeding wound on his lower back but after 15 minutes, the bleeding rate remained the same. Hence, adrenaline-soaked gauze was applied to the wound and the bleeding started to reduce gradually. Compression was applied to the bleeding wound at the sacral area using adrenaline-soaked gauze and adhesive bandages. Three hours after admission to the ED, the bleeding finally stopped. The patient's blood results were normal. His full blood count showed haemoglobin levels of 15.1 mg/dL and a platelet count of 330×10^9 /dL. His coagulation profile showed PT 12.2, INR 0.91 and aPTT 30.7. He was discharged home with wound-care advice and was told to return if the bleeding recurred.

DISCUSSION

Medicinal leech therapy has been used for a long time to treat various illnesses. Although there is no solid evidence regarding its benefit, some experiments done on mice have shown positive effects on tissue repair. However, the therapy has several side effects which the practitioner should be aware of and inform their clients (Sig et al. 2017). The main potential side effects are allergies to the leech saliva, infection from the bite area and prolonged bleeding at the bite area (Joslin et al. 2017; Çakmak et al. 2018).

The side effect which was seen in our patient was prolonged bleeding from the wound, although this was not the first time he had undergone

medicinal leech therapy. It is important to note that there is always a risk of prolonged bleeding from leech bites even though it was administered under supervision of a complementary medicine practitioner and not occurred previously. İkizceli et al. (2005) reported a case of a young male that suffered prolonged bleeding from leech bites despite repeatedly undergoing leech therapy previously for a year. This side effect is due to the bioactive molecules released in the leech's saliva to enable it to feed freely from its prey. These molecules inhibit platelet function at the bite area and histamine-like molecules will cause local vasodilation to increase blood flow to the area (Sig et al. 2017). There are also molecules with anticoagulant properties, among these the most important one is hirudin. Hirudin inhibits thrombin and disrupts the coagulation cascade. Although its effect is usually around 30 minutes, it is not unusual to have prolonged bleeding from the leech-bite wound for up to 10 hours (Sig et al. 2017; Joslin et al. 2017). There are no guidelines or evidence for the treatment of prolonged bleeding from a leech bite in the literature. However, several recommendations have been suggested through case reports such as the use of thrombin solution, tranexamic acid, haemostatic dressing, such as, QuikClot and primary suture of the wound (Fedor 2012; Güven 2016; Zengin et al. 2012). In our case, we initially applied compression alone to the wound to increase platelet aggregation and to activate the coagulation cascade (Palm & Altman 2008; Güven 2016). However, we

found that the method was ineffective because the rate of bleeding from the wound remained the same after we released the compression. Hence, we applied adrenaline-soaked gauze over the wound to stop the bleeding. Topical adrenaline acts on the adrenoreceptors on the blood vessels and causes vasoconstriction to achieve haemostasis (Palm & Altman 2008). Zengin et al. (2012) suggested using thrombin solution due to the properties of hirudin which inhibits thrombin. However, we did not have thrombin solution in our setting at the time the patient presented. Systematic reviews on haemostatic agents for skin wounds have suggested the use of adrenaline as a haemostatic agent because it is cheap and its side effects are rare when applied topically; although there is a risk of tachyarrhythmias. When compared to adrenalin, thrombin solution is more expensive and achieves haemostasis slower on skin wounds (Palm & Altman 2008; Groenewold et al. 2011).

The leeches that attach and suck blood may regurgitate into the wound during feeding or removal, leading to blood transmitted infection. The main pathogen involved is usually of the *Aeromonas* species (Zengin et al. 2012; Beka et al. 2018). To prevent this, it is recommended not to forcefully remove the leeches while they are feeding and to never reuse the leeches (Sig et al. 2017; Joslin et al. 2017). The wounds should be cleaned and antibiotic creams may be applied. The use of oral antibiotic prophylaxis is uncertain. Zengin et al. (2012) and Sig et al. (2017) recommend giving prophylactic

antibiotics to prevent infection at the bite area. On the other hand, Joslin et al. (2017) are against prophylactic antibiotics because leeches can harbour other pathogens such as viruses, fungi, and parasites which can also infect the wound. However, if the medical practitioner starts the patient on antibiotics, it should have coverage for the *Aeromonas* species such as third-generation cephalosporin, aminoglycosides and ciprofloxacin (Sig et al. 2017; Beka et al. 2018).

CONCLUSION

Medicinal leech therapy may be beneficial although more evidence is needed to support this claim. Meanwhile, the public should realize the risks involved in the therapy. Prolonged bleeding from the wound can occur despite the therapy being done under supervision with no history of complications arising from the bite wounds. The practitioners providing medicinal leech therapy should advise their customers on when to seek treatment and be prepared with first aid skills to deal with the complications such as prolonged bleeding. In this case report, we suggest using topical adrenaline due to its known effect to help achieve haemostasis on skin wounds, wide availability and low cost.

ACKNOWLEDGEMENT

The authors would like to thank the staff and colleagues of Pusat Perubatan University Kebangsaan Malaysia for providing their insight and expertise

in this case report. The authors would also like to thank to Chai SP and Kaharuddin M. for contributing the photographs in this case report.

REFERENCES

- Beka, L., Fullmer, M.S., Colston, S.M., Nelson, M.C., Talagrand-Reboul, E., Walker, P., Ford, B., Whitaker, I.S., Lamy, B., Gogarten, J.B., Graf, J. 2018. Low-level antimicrobials in the medicinal leech select for resistant pathogens that spread to patients. *mBio* **9**(4): e01328-18.
- Çakmak, T., Çaltekin, İ., Gökçen, E., Savrun, A., Yaşar, E. 2018. Kounis syndrome due to hirudotherapy (leech therapy) in emergency department; a case report. *Türk J Emerg Med* **18**(2): 85-7.
- Fedor, P.J. 2012. Novel use of a haemostatic dressing in the management of a bleeding leech bite: a case report and review of the literature. *Wilderness Environ Med* **23**(1): 44-8.
- Groenewold, M.D., Gribnau, A.J., Ubbink, D.T. 2011. Topical haemostatic agents for skin wounds : a systematic review. *BMC Surg* **11**(1): 15.
- Güven, R. 2016. Treatment of a patient in hemorrhagic shock due to leech bite with tranexamic acid. *Am J Emerg Med* **34**(11): 2253.
- Ikizceli, I., Avsarogullari, L., Sözüer, E., Yürümez, Y., Akdur, O. 2005. Bleeding due to a medicinal leech bite. *Emerg Med J* **22**(6): 458-60.
- Joslin, J., Biondich, A., Walker, K., Zanghi, N. 2017. A comprehensive review of hirudiniasis : from historic uses of leeches to modern treatments of their bites. *Wilderness Environ Med* **28**(4): 355-61.
- Palm, M.D., Altman, J. S. 2008. Topical hemostatic agents: A review. *Dermatol Surg* **34**: 431-45.
- Sig, A.K., Guney, M., Uskudar, A., Ozmen, E. 2017. Medicinal leech therapy-an overall perspective. *Integr Med Res* **6**: 337-43.
- Zengin, S., Yarbil, P., Kilic, H., Al, B. 2012. Prolonged bleeding due to a medicinal leech bite: another treatment method, primary suture. *BMJ Case Rep* 2012: bcr0220125759

Received: 04 Nov 2019

Accepted: 29 Apr 2020