



Prolonged bleeding on the neck in leech therapy: Case report

Atakan Savrun¹, Selim Bozkurt¹, Mehmet Okumus¹, Emre Gokcen², Murat Turkaslan²

ABSTRACT

Superficial skin bleeding can usually be stopped by applying short-time compression, unless the patient suffers from coagulation disorders or uses anticoagulant. Because of the anticoagulant component of leech saliva, a leech bite may cause long-time bleeding, which cannot be stopped via compression. In this study, the case of a patient who applied leech therapy on her neck for the treatment of migraine has been presented.

Key words: Bleeding, headache, leech bite

Introduction

It is known that leech therapy was administered for certain diseases even in ancient times. Leeches belong to the phylum Annelida and there are more than 15,000 species of leech. They are generally ectoparasites and feed on blood. More than 650 of these species comprise the class Hirudinea. Marine, freshwater, and terrestrial leeches generally belong to this class. *Hirudo medicinalis* (*H. medicinalis*) and *Hirudo verbana* are the most common species in Turkey [1-3].

H. medicinalis is colloquially known as the medical leech. The use of *H. medicinalis* leeches in alternative medicine dates back to ancient times; however, leech therapy has also started being applied in modern medicine today. This therapy is often administered by plastic surgeons in order to relieve venous congestion and to stimulate circulation after flap and re-implantation sur-

geries. Moreover, *H. medicinalis* is also used in order to relieve muscle and joint pain in various localizations in our country [4-6].

Case Report

A 45-year-old female patient came to the emergency department because of unstoppable bleeding on the right side of her neck. She stated that it had been bleeding for half an hour and could not be stopped in spite of compression and creams they applied. She also expressed that she did not suffer from any disease except for migraine, which had been lasting for 15 years. She said that she saw various doctors for the treatment of migraine, but could not find a solution for her headache. She administered leech therapy on her neck as a result of the suggestions of her acquaintance for relieving the pain, since she and her family were not content with her current situation. She removed the leeches on

Author affiliations : ¹Department of Emergency Medicine, Medical Faculty, Kahramanmaraş Sutcu Imam University, Kahramanmaraş, Turkey ²Department of Emergency Medicine, Keçiören Training and Research Hospital, Ankara, Turkey

Correspondence : Selim Bozkurt, MD, Department of Emergency Medicine, Medical Faculty, Kahramanmaraş Sutcu Imam University, Kahramanmaraş, Turkey. e-mail: selimbozkurt01@yahoo.com

Received / Accepted : October 07, 2013 / December 05, 2013



Figure 1. Leech bite sites.

the right side of her neck after an hour. After the removal of the leeches, the wound started bleeding slightly. She came to our clinic after she unsuccessfully tried to stop the bleeding by her own means for 30 min.

On her physical examination, it was observed that her general condition was fine and that she was conscious, cooperative and oriented. Her vital findings (blood pressure: 120/80 mm/Hg, pulse: 89 beats/min, and body temperature: 36.8°C) were normal. There were seven lesions on the right side of her neck, which were compatible with leech bites and five of which were bleeding (Figure 1). Other system examinations were normal.

In the laboratory analysis, the following data were recorded: Hemoglobin 11.6 g/dl (12.2-18.1), hematocrit 34.1% (37.7-53.7), white blood cell 8650/mm³ (4000-10,500), thrombocyte 341,000/mm³ (142,000-424,000), prothrombin time (PT) 13.4 s (10.9-15.2), activated partial thromboplastin time (aPTT) 36.1 s (24-37), international normalized ratio (INR) 0.86 (0.8-1.2).

The lesions of the patient were cleaned with antiseptic solution and were closed with sterile gauze

dressing on which one ampoule transamin (tranexamic acid) was administered. Bleeding stopped after 4 h and no bleeding was observed afterwards. After bleeding was brought under control, the data of the laboratory analysis were recorded as follows: Hemoglobin 11.3 g/dl, hematocrit 33.8%, white blood cell 8750/mm³, thrombocyte 331,000/mm³, PT 13.2 s, aPTT 36.1, and INR 0.90. The patient was discharged from hospital by starting oral Ciprofloxacin (Cipro 500 mg tablet, Biofarma, Turkey) at 2 × 500 mg/day orally for antibiotic prophylaxis.

Discussion

Today, various treatment methods that are colloquially known as alternative medicine and in which drugs are not used are very common. Leech therapy is an alternative method that has been applied for the treatment of some painful diseases since ancient times. Especially, certain components of leech saliva play an important role in the treatment process. The saliva has vasodilatation, bacteriostatic, analgesic, anti-inflammatory, and anticoagulant effects. It can also resolve edema, eliminate microcirculation failures, lower the blood pressure, reduce the pain, and stimulate bioenergetics of the organism [7-9]. In the abovementioned case report, the leech therapy was administered on the neck in order to relieve pain.

H. medicinalis can suck an amount of blood which is 3-10 times more than its body weight. It has been stated that the average time of sucking blood from people is approximately 68 ± 26 min and that the increase observed in the body weight within the period of sucking is 5 times bigger than the original weight. *H. medicinalis* contains more antithrombotic hirudin than other species of leech [10,11]. Certain anticoagulant components have been found in the leech saliva. Of these components, hirudin and bdellin have strong anticoagulant effects and different mechanisms. They inhibit platelet aggregation. Decorsin, ornatin, low molecular weight fraction II and III, apyrase, antiplatelet protein, and calin which can inhibit platelet aggregation have been detected in leech saliva. Hirudin can prolong the time of bleeding through thrombin inhibition, whereas bdellin has the same effect on bleeding due to anti-plasmin activity [12-14].

Hirudotherapy may cause very different compli-

cations. Most commonly, it can prolong the time of bleeding and lead to bleeding, which cannot be easily stopped; it may cause bacterial infections and allergic reactions in some part of the body or all over the body. Ikizceli, et al. [6] presented a case of a 19-year-old patient who applied the leech therapy because of pain felt on the legs and who suffered from prolonged bleeding. They stated that bleeding was stopped through gauze dressing compression. Michalsen et al. [15] reported in their study on an osteoarthritis patient that clinically unimportant hemoglobin decreases were observed in the cases of the patients to whom they applied hirudotherapy and that slight bleeding lasting for 12 h was seen in only one patient. Kose et al. [16] presented a case of a 65-year-old male patient on the body of whom 130 leech bites were found as a result of entering into a lake full of leeches for varicose treatment. In the aforesaid case, the wounds continued to bleed at the moment of admission to hospital. They expressed that they applied six units of erythrocyte suspension and eight units of fresh frozen plasma transfusion to the patient due to prolonged bleeding and a serious decrease in hemoglobin level. In our case, the patient administered the leech therapy for the treatment of her migraine that had lasted for 15 years and the density of which continues to increase. Her wound was still bleeding during the admission. The bleeding stopped after the wound was closed with transamin gauze dressing. We did not apply compression on the neck, since the prolonged direct compression might lead to bradycardia after vagal stimulation. Her coagulation parameters were normal; an unimportant decrease was observed in the hemoglobin level.

As can be seen in this case, unstoppable bleeding after leech therapy is one of the admission reasons to hospitals. Individuals should avoid applying this therapy to the parts of the body, such as the neck, where it is hard to administer compression. Emergency physicians should examine the possibility of leech bites in the cases of the patients who come to hospital with the complaint of unstoppable slight bleeding and should instantly consider that bleeding may continue for a long time.

Conflict of interest statement

The authors have no conflicts of interest to declare.

References

1. Srivastava A, Sharma R. A brief review on applications of leech therapy. *Arch Appl Sci Res* 2010;2:271-4.
2. Mory RN, Mindell D, Bloom DA. The leech and the physician: Biology, etymology, and medical practice with *Hirudinea medicinalis*. *World J Surg* 2000;24:878-83.
3. Minkin BI. Leeches in modern medicine. *C Tips* 1990;52:1-6.
4. Ayık E, Gürler N, Kuvat SV, Aydın A, Tunçer S, Kesim SN, et al. Comparison of different prophylaxis methods in order to prevent infection in leech therapy: Pre-study. *ANKEM J* 2006;20:76-80.
5. Hasanzadeh Mofrad M, Shafiei R, Bolandi S, Najjari M, Hatam GR. Leech bite: A rare cause of postmenopausal vaginal bleeding. *Iran Red Crescent Med J* 2012;14:384-5.
6. Ikizceli I, Avsarogullari L, Sözüer E, Yürümez Y, Akdur O. Bleeding due to a medicinal leech bite. *Emerg Med J* 2005;22:458-60.
7. Abdullah S, Dar LM, Rashid A, Tewari A. Hirudotherapy/leech therapy: Applications and indications in surgery. *Arch Clin Exp Surg* 2012;1:172-80.
8. Hokelek M, Guneren E, Eroğlu C. An experimental study to sterilize medicinal leeches. *Eur J Plast Surg* 2002;25:81-5.
9. Gödekmerdan A, Arusan S, Bayar B, Sağlam N. [Medicinal leeches and hirudotherapy]. [Article in Turkish]. *Turkiye Parazitoloj Derg* 2011;35:234-9.
10. Munro R, Siddal M, Desser SS, Sawyer RT. The leech as a toll for studying comparative haematology. *Comp Haematol Int* 1992;2:75-8.
11. Sağlam N, Dorucu M, Ozdemir Y, Seker E, Sariyeypoglu M. Distribution and economic importance of medicinal leech, *Hirudo medicinalis* (Linnaeus, 1758) in Eastern Anatolia/Turkey. *Lauterbornia* 2008; 65: 105-18.
12. Eldor A, Orevi M, Rigbi M. The role of the leech in medical therapeutics. *Blood Rev* 1996;10:201-9.
13. Baskova IP, Kostrjukova ES, Vlasova MA, Kharitonova OV, Levitskiy SA, Zavalova LL, et al. Proteins and peptides of the salivary gland secretion of medicinal leeches *Hirudo verbana*, *H. medicinalis*, and *H. orientalis*. *Biochemistry (Mosc)*

- 2008;73:315-20.
14. Singh AP. Medicinal leech therapy (hirudotherapy): A brief overview. *Complement Ther Clin Pract* 2010;16:213-5.
 15. Michalsen A, Klotz S, Lüdtke R, Moebus S, Spahn G, Dobos GJ. Effectiveness of leech therapy in osteoarthritis of the knee: A randomized, controlled trial. *Ann Intern Med* 2003;139:724-30.
 16. Kose A, Zengin S, Kose B, Gunay N, Yildirim C, Kilinc H, et al. Leech bites: Massive bleeding, coagulation profile disorders, and severe anemia. *Am J Emerg Med* 2008;26:1067.e3-6.

© SAGEYA. This is an open access article licensed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted, noncommercial use, distribution and reproduction in any medium, provided the work is properly cited.