Turkish Journal of Cerebrovascular Diseases 2023; 29(3): 158-162 Türk Beyin Damar Hastalıkları Dergisi 2023; 29(3): 158-162
Turk J Cereb Vasc Dis
doi: 10.5505/tbdhd.2023.94557

CASE REPORT **OLGU SUNUMU**

BASAL GANGLIA INFARCTION AFTER HIRUDOTHERAPY: A CASE REPORT

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ABSTRACT

Leeches are segmented, hermaphrodite animals that live in freshwater. These animals have been used in various medical applications since ancient times in the treatment of some diseases. In this article, we aimed to present a case who presented with acute stroke symptoms after prolonged bleeding due to leech therapy. A 61-year-old male patient was admitted to the emergency service with speech disorder, slip on the corner of the mouth, and weakness in the left arm and leg. It was learned that he had leech therapy for his lower back and knee pains about five hours before his complaints started, but the bleeding did not stop at the intervention sites and then he had low blood pressure. There was no acute central pathology was observed in brain computed tomography. Total occlusion was observed in the right ICA cervical proximal segment in CT angiography. Although the traces of the use of leeches in various medical applications date back thousands of years, it remained in the background in the 20th century because it did not comply with the new requirements and great advances of modern medical regulations. Leeches inject many bioactive substances found in their saliva into the host tissue. These secreted proteins react with the coagulation cascade of the host, inhibit platelet adhesion, and increase blood viscosity. As in our case, prolonged bleeding after leech therapy may disrupt hemodynamic stabilization and lead to serious problems such as life-threatening anemia, hemorrhagic shock, and hemodynamic stroke.
Keywords: Hirudotherapy, acute stroke, hemodynamic stroke.

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Received: 28.08.2023 **Accepted:** 24.09.2023
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Please cite this article as following: Polat Zafer A, Boncuk Ulaş S, Güzey Aras Y, Acar BA, Acar T. Basal ganglia infarction after hirudotherapy: A case report. Turkish Journal of Cerebrovascular Diseases 2023; 29(3): 158-162. doi: 10.5505/tbdhd.2023.49140

HİRUDOTERAPİ SONRASI GELİŞEN BAZAL GANGLİON ENFARKTI: OLGU SUNUMU

ÖZ

Sülükler tatlı sularda yaşayan, parçalı, hermafrodit canlılardır. Bu canlılar çeşitli tıbbi uygulamalarda eski çağlardan bu yana bazı hastalıkların tedavilerinde kullanılmaktadır. Bu yazıda sülük tedavisine bağlı uzamış kanama sonrası akut inme bulguları ile gelen bir vakayı sunmayı amaçladık. 61 yaş erkek hasta konuşma bozukluğu, ağız kenarında kayma, sol kol ve bacakta güçsüzlük gelişmesi üzerine acile servise başvurdu. Şikayetleri başlamadan yaklaşık beş saat önce bel ve diz ağrıları için sülük tedavisi yaptırdığı, ancak girişim yerlerinde kanamanın durmadığı ve ardından tansiyon düşüklüğü yaşadığı öğrenildi. Beyin bilgisayarlı tomografide (BBT) belirgin akut santral patoloji izlenmedi. Kranial ve servikal BT anjiyografide sağ ICA servikal segment proksimalinde total oklüzyon gözlendi. Sülüğün çeşitli tıbbi uygulamalarda kullanımının izleri binlerce yıl öncesine dayansa da 20. yüzyıla gelindiğinde modern tıbbi düzenlemelerin yeni gereksinimlerine ve büyük ilerlemelere uymaması nedeniyle geri planda kalmıştır. Sülükler bağlanma sırasında tükürüğünde bulunan birçok biyoaktif maddeyi konakçı dokuya enjekte eder. Salgılanan bu proteinler konağın pıhtılaşma kaskadı ile reaksiyona girer, trombosit adhezyonunu engeller ve kan viskozitesini arttırır. Bizim olgumuzda olduğu gibi sülük tedavisi sonrası uzamış kanamalar hemodinamik stabilizasyonu bozarak hayatı tehdit eden anemi, hemorajik şok, hemodinamik inme gibi ciddi sorunlara yol açabilir.
Anahtar Sözcükler: Hirudoterapi, akut inme, hemodinamik inme.

INTRODUCTION

Leeches are segmented, hermaphrodite animals that live in freshwater (1). These animals have been used in various medical applications since ancient times in the treatment of some diseases. The use of leeches as a treatment method is called hirudotherapy. It is used in many diseases such as cardiovascular diseases, diabetes mellitus (DM) and related complications, soft tissue damage, revascularization, and after replantation treatment (2). The most frequently reported complication of hirudotherapy is local infections, followed by allergy, long-term bleeding, and undesirable migration of the leech (3). In this article, we aimed to present a case with acute stroke symptoms after prolonged bleeding due to leech therapy.

CASE REPORT

A 61-year-old male patient was admitted to the emergency service with a speech disorder, slip on the corner of the mouth, and weakness in the left arm and leg. It was learned that he had leech therapy for his lower back and knee pains about five hours before his complaints started, but the bleeding did not stop at the intervention sites and then he had low blood pressure. In his medical history, he had obstructive sleep apnea syndrome (OSAS) and hypertension.

His general condition was moderate, and he was conscious and partially cooperative on neurological examination. Isochoric pupils, light reflex +/+, right head-eye deviation, and left homonymous hemianopia were observed. There was effacement on the left nasolabial groove, 1/5 hemiparesis in the left upper and lower extremities, and muscle strength was normal on the right side. On physical examination, continuing bleeding foci were observed in the lumbar region and right crural region where leech therapy was applied (Figure 1-A,B).

Electrocardiography (ECG) showed a sinus tachycardia of 140/min and blood pressure was measured as 70/50 mmHg. It was found that hemoglobin value in laboratory parameters was 10.6 g/dL at the emergency service admission and 8.6 g/dL at the second-hour control. It was learned that he had it checked ten days before his admission to the emergency department, and the basal value was 14.6 g/dL at that time. Coagulation parameters such as platelet count, prothrombin time, and activated partial thromboplastin time were normal. No obvious acute central pathology was observed on brain computed tomography (BCT). Total occlusion was observed in the right proximal cervical segment of ICA in cranial and cervical CT angiography (Figure 2-A,B,C), and no pathology was observed in the intracranial major vessels. Diffusion-weighted Magnetic Resonance Imaging showed a lesion compatible with acute infarction in the globus pallidus at the level of the right basal ganglia (Figure 3-A,B). On echocardiography (ECHO), ejection fraction was measured as 65%. On carotid and vertebral Doppler ultrasonography, the right ICA was completely occluded and multiple levels of calcific and fibrocalcific plaques were observed in the left

Figure 1. Continuous bleeding is seen in the lumbar region (A) and the right crural region (B).

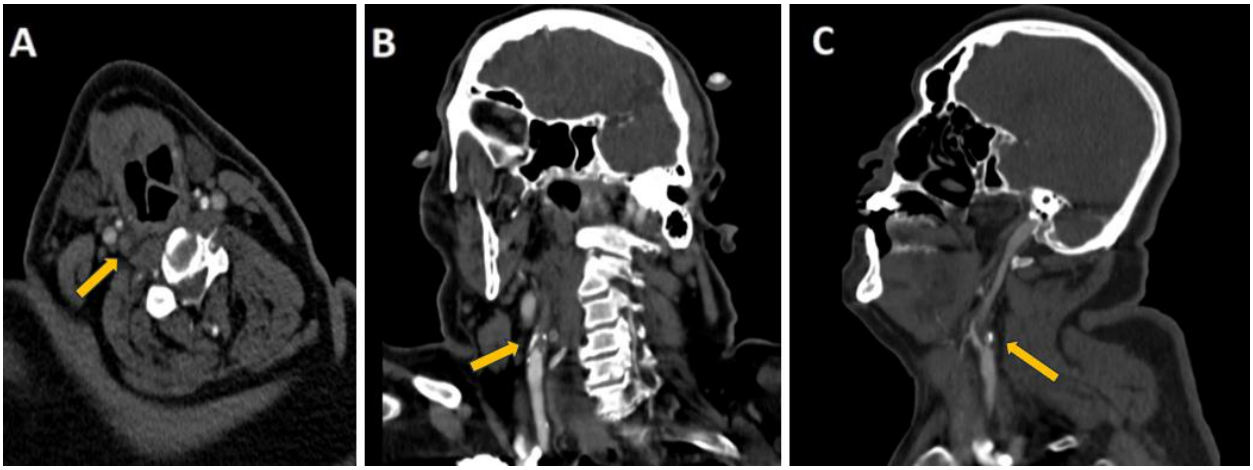

Figure 2. On cervical CT angiography, complete occlusion is observed in the proximal right cervical segment of ICA in A) axial section, B) coronal section, C) sagittal section.

CCA and ICA. The systolic blood pressure of the patient, who was followed-up in the neurology clinic, was increased above 140 mmHg with two units of erythrocyte replacement and supportive fluid therapy. Hemostasis was achieved by applying pressure dressing to the bleeding areas where hirudotherapy was applied. No gastrointestinal or other regional bleeding focus was detected in further examinations, and hemoglobin decrease secondary to hirudotherapy was predicted. After hemodynamic stabilization was achieved, the patient was taken to a physical therapy and rehabilitation program.

DISCUSSION AND CONCLUSION

Leeches (Euhirudinea) were first named by Linnaeus in 1758 AD (4). It has front and rear suckers that it uses during movement and to attach to the host's surface (5). With the help of its suction cups, it can usually suck 2-20 ml of blood within 10-30 minutes (6,7). Although the traces of the use of leeches in various medical applications date back thousands of years, it remained in the background in the 20th century because it did not comply with the new requirements and great advances of modern medical regulations (4).

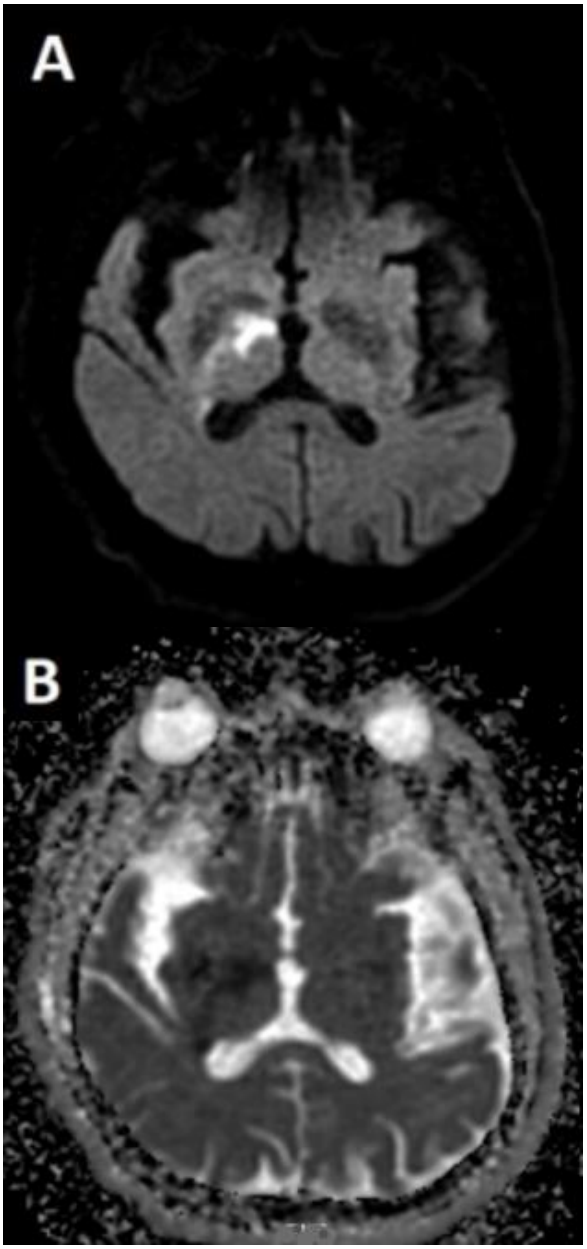

Figure 3. In diffusion MRI, a lesion compatible with acute infarction is observed in the globus pallidus at the level of the right basal ganglia, hyperintense at b1000 sequence (A) and hypointense at ADC sequence (B).

However, as we approach today, it has started to become popular again in many areas such as cardiovascular diseases, arthritis, migraine, DM and related complications, replantation, and revascularization treatment.

Leeches inject many bioactive substances found in their saliva into the host tissue (8). These secreted proteins react with the coagulation cascade of the host, inhibit platelet adhesion, and increase blood viscosity.The most famous of these proteins, hirudin, is the strongest natural inhibitor of fibrin-bound thrombin (10). A single bite of a leech disrupts the coagulation cascade, causing prolonged bleeding for hours or even days (11,12). This situation is often caused by the effects of factors such as hirudin, hyaluronidase, vasodilators and kalin in the leech saliva remaining in the bite (13).

Leeches also secrete different active compounds such as factor Xa (FXa) inhibitors and fibrinolytic enzymes, as well as enzymes with antiplatelet effect (14). Decorsin, one of these compounds, exhibits antiplatelet activity due to its high affinity for glycoprotein IIb-IIIa receptors (15). Kalin, another compound, prevents the adhesion of platelets by inhibiting von Willebrand factor (16). It is suggested that due to all these effects, said molecules can be used as drugs in cardiovascular diseases such as acute coronary syndrome (17). However, care should be taken in terms of complications related to hirudotherapy, and prolonged bleeding that may occur should be considered.

Studies have demonstrated that the most reported complication concerning hirudotherapy is bacterial infection. Aeromonas Hydrophila is the most common microorganism isolated from leech bites (9). It is essential to administer prophylactic antibiotics before the procedures in which leech therapy will be applied; sulfamethoxazole/trimethoprim (SXT) and second and third generation cephalosporins can be given as prophylaxis (18-20). Another complication following local or systemic infections is prolonged bleeding. As in our case, prolonged bleeding after leech therapy may disrupt hemodynamic stabilization and lead to serious problems such as life-threatening anemia, hemorrhagic shock, and hemodynamic stroke. In a study, it was shown that bleeding had stopped after fresh frozen plasma and tranexamic acid treatment in a patient who presentedd with stage 3 hemorrhagic shock due to bleeding after leech application (21). In our case, hemodynamic stabilization was achieved after two units of erythrocyte suspension. However, further studies are required on bleeding control after leech therapy. In conclusion, acute or chronic bleeding that may occur in various tissues and organs due to hirudotherapy should be kept in mind, and patients should be informed in detail

about possible symptoms and complications before treatment.

Hemodynamic strokes due to ICA occlusion were reported as regional infarcts, anterior external border zone infarcts, posterior external border zone infarcts, internal border zone infarcts, striatocapsular infarcts, and lacunar infarcts. The incidence of striatocapsular infarcts, as in our case, was reported as 12% in hemodynamic strokes with ipsilateral total ICA occlusion (22). Hirudotherapy-related ischemic cases were not reported in the literature. In the case we share here, a hemodynamic stroke is observed not directly through the pathophysiological mechanisms of hirudotherapy, but indirectly as a result of hypotension that developed due to the bleeding it caused. Although the effectiveness of hirudotherapy and similar alternative medicine methods is socially accepted, many further studies are required regarding their reliability and complication management.

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Ethics

Informed Consent: The authors declared that informed consent form was signed by the patient.

Copyright Transfer Form: Copyright Transfer Form was signed by the authors.

Peer-review: Internally peer-reviewed.

Authorship Contributions: Surgical and Medical Practices: APZ, SBU, YGA, BAA, TA. Concept: APZ, SBU, YGA, BAA, TA. Design: APZ, SBU, YGA, BAA, TA. Data Collection or Processing: APZ, SBU, YGA, BAA, TA. Analysis or Interpretation: APZ, SBU, YGA, BAA, TA. Literature Search: APZ, SBU, YGA, BAA, TA. Writing: APZ, SBU, YGA, BAA, TA.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.