Case Report

Pediatric Vaginal Leech Infestation with Severe Bleeding: A Case Report and Review Article

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A B S T R A C T

Background: Vaginal leech infestation is a rare event with vaginal bleeding being its prominent sign. Few cases have been reported in young children.
Case: In this article, we present a case of vaginal leech infestation in a 2-year-old girl who presented with significant vaginal bleeding that caused severe acute anemia, prompting transfusion. On examination, she appeared anemic, but healthy, without any signs of pubertal development. The leech was seen during examination with the patient under anesthesia and was removed. With removal of the leech, bleeding decreased significantly and stopped completely after 2 hours. She was discharged the next day in good condition.
Summary and Conclusion: The important concern in vaginal leech infestation is early diagnosis to prevent severe acute anemia and shock.
Key Words: Bleeding, Leech, Pediatric, Vagina

Introduction

Vaginal bleeding (VB) in prepubertal the period is uncommon.[1] In the neonatal period, VB might be induced by maternal hormonal withdrawal. Beyond the neonatal period, more than 50% of causes of prepubertal VB are local lesions of the vagina including trauma, foreign bodies, hemangioma, and tumors. Another cause of bloody vaginal discharge in children is bacterial or fungal vulvovaginitis.[2] Hormonal changes in this age group can also present as VB; central precocious puberty, severe hypothyroidism, and granulosa cell tumor of the ovary are the main causes to name. However in some patients the reason for bleeding remains unclear.[1]

Leech bite is a rare etiology of VB. Most cases have been reported from tropical and subtropical countries.[3]

Because the differential diagnosis of VB in children is narrow, a detailed history and physical examination especially genitourinary examination usually leads physicians to the accurate diagnosis. In some cases imaging and laboratory studies are needed.[1]

Leeches are worm-like parasites and a subset of phylum Annelida. They are blood-sucking creatures that live in water in warm climates.[4] The life cycle of leeches is depicted in Figure 1. During feeding leeches secrete analgesic and anti-inflammatory materials, resulting in the host not sensing them. Also when it bites the host, it secretes other agents that result in vasodilation and anticoagulation, by inhibition of platelet aggregation, resulting in continued free flow of blood to the feeding leech.[5] Aside from inadvertent infestations, hirudotherapy (medicinal leech therapy) is a complementary treatment that has been used for centuries in Greece, Rome, and Middle East countries.[6] This technique is usually applied in venous diseases, plastic surgeries (flaps and grafts), postphlebitic syndrome, ecchymosis, and hematomas. Experiments in mice suggest that hirudotherapy has anticancerous effects too. During leech therapy monitoring the platelet count and coagulation indices are necessary.[5]

In this article we present a case of VB in a 2-year-old girl due to leech infestation and review the literature on this subject.

Case

A 2-year-old girl was admitted to the emergency department of Akbar Children Hospital, Mashhad, Iran, with significant VB for 12 hours. There was no obvious history of trauma or child abuse. She was pale with systolic blood pressure of 100 mm Hg, and pulse rate of 110 per minute. Axillary temperature was 36.8° and respiratory rate was 36 per minute. She was a healthy child without any previous diseases and in good growth condition with a body mass index of 15.2 (25th percentile), weight of 11 kg, and height of 85 cm (both between the 15th and 50th percentile for age). Vaccination history was complete.

On physical examination her conjunctiva were pale. Heart and lung sounds were normal. Her breast development was Tanner 1 and there was no axillary and pubic hair growth. Her abdomen was soft without tenderness. No mass was palpated in the hypogastric area. Her diaper was full of bright blood. Detailed examination of the perineal

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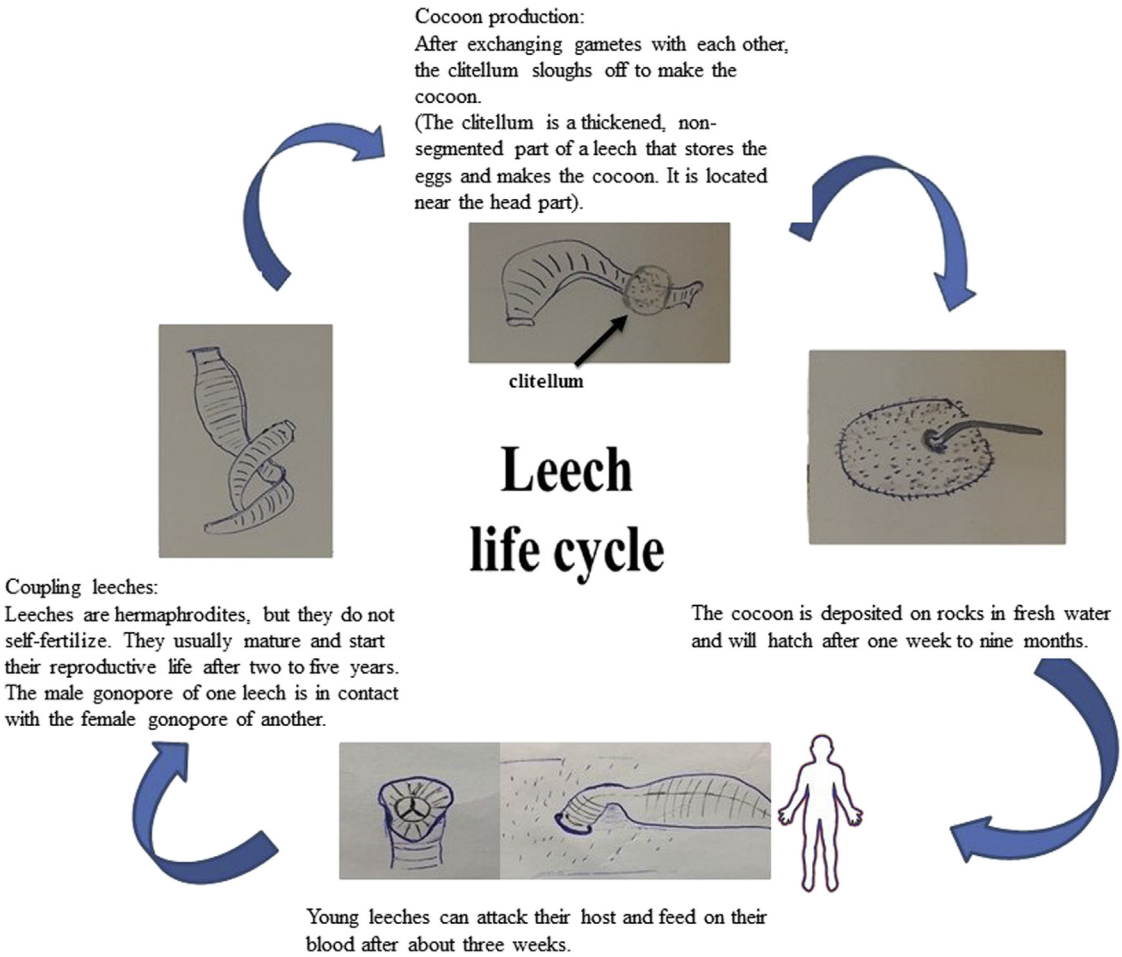

Fig. 1. Leech life cycle.

area was not possible because of agitation of the patient and parents, and the presence of profuse bleeding in that area.

Hemoglobin was 12 g/dL at admission but decreased to 9.4 g/dL 6 hours later. Her platelet count was 318 $\times$ 10^3/μL (normal, 150 $\times$ 10^3 to 500 $\times$ 10^3). Prothrombin time was 13 seconds (normal, 11-14 seconds), partial thromboplastin time was 27 seconds (normal, 25-40 seconds), and international normalized ratio was 1 (normal range: 0.8-1.2).

Because the patient was admitted in the middle of the night, and because of continued bleeding and decrease in hemoglobin the she was taken to the operating room at 6 AM for complete urogenital evaluation under anesthesia. Exploration of the perineal area was negative for lacerations or signs of trauma. The introitus was covered with bright blood. The clitoris and labia had normal development for the child's age and she had no signs of precocious puberty. It was not initially obvious whether the bleeding was from the vagina or the urinary system.

Cystourethroscopy was performed first, to avoid the risk of iatrogenic hymen injury by an unnecessary vaginoscopy, in case the urinary system was found to be the source of bleeding. Meatus, urethra, bladder neck, and bladder were normal. No bleeding was detected from either ureter orifices. Then, vaginoscopy was performed, which revealed multiple petechia in the vaginal wall. A moving brown colored object (leech) was found in the vagina. It dislodged and came out by the stream of normal saline during vaginoscopy (Fig. 2). The anatomy of the vagina and cervix was normal without any other pathology. The leech was sent to the parasitology department for examination (Fig. 3).

The child's diaper and introitus area were checked every 15 minutes during the first hour and then every 30 minutes for the next 6 hours. VB diminished in a few minutes after removal of the leech, and stopped completely after 2 hours. Upon further questioning the parents remembered that the girl had played in a fresh water pond 1 day before VB started, which was missed in the primary history-taking. The child was discharged from the hospital after 24 hours in good condition. Five days later, she came back to the pediatric clinic without any signs of infection or complications.

Summary and Conclusion

Prepubertal VB brings concerns for evaluation and diagnosis. The main causes are precocious puberty, trauma or child abuse, and foreign body.[1] Although uncommon, malignancies should always be considered in the differential diagnosis.[7] VB due to leech bite is a rare condition. One of the main categories that should be ruled out in every "vaginal" bleeding is blood loss from the urinary system as in cases of acute cystitis, urethral prolapse,[8] meatal injury,

Fig. 2. After vaginoscopy the leech moved to the introitus.

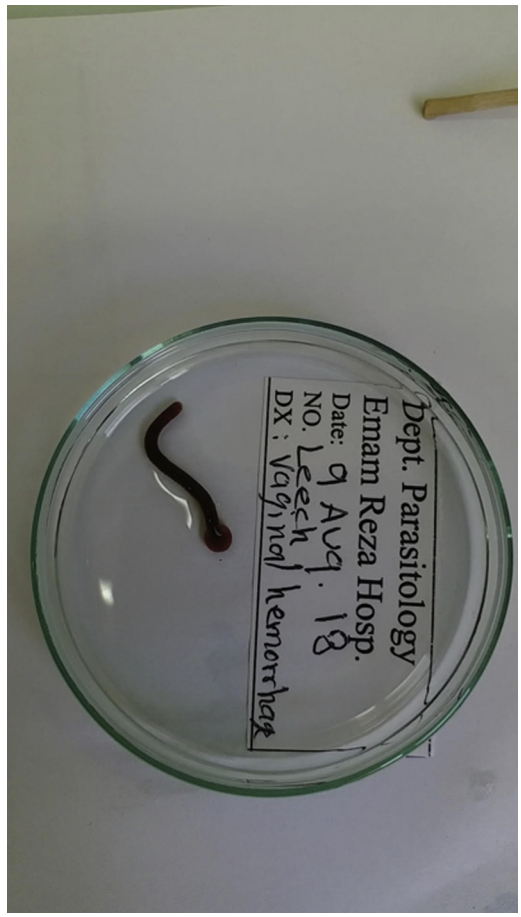

Fig. 3. The dislodged leech.

abuse,[9] urinary stone, and tumors of bladder and kidney (Wilms tumor).[10] In the current case, urological causes of bleeding were excluded using cystourethroscopy.

We opted to perform examination with the patient under anesthesia in this case because of the urgency of the situation and uncooperativeness of the patient. In less urgent cases, performing ultrasonography or other modes of diagnosis before examination using anesthesia might be a reasonable choice.

Leeches are hematophagous and attack the host with their sucker. Leeches do not transmit infections like the seen with *Anopheles* mosquito and malaria, but rather by inoculation of the wound if intestinal contents are regurgitated by squeezing during removal.[11–13] Cross-infection and skin and mucosal infection do not usually occur after leech infestation. Bacteria or viruses from the previous host's blood can survive in the body of the leech for months, but usually cannot be transferred to the next host. There are a few reports of disease transmission, such as *Streptococcus* sp. and *Clostridium tetani* through leech infestation,[4] which brings concerns during removing the leech, because squeezing the leech when it is sucking blood might cause regurgitation of the contents of his gut to the host's wound.

Host infection with *Aeromonas* spp has been reported in medical hirudotherapy due to nosocomial infections. This infectious complication has been reported in commercial leeches and explains the need for prophylactic antibiotics in medical hirudotherapy. However, there have been no reports of infection in accidental leech infestation.[11] Various anticoagulant substances are transmitted through the leech bite. These substances include hirudin, bufrudin, theromin, granulin-like peptide, and haemadin[12] and can cause continuous bleeding, even after removal of the leech.[13] Leeches can bite human beings through skin, or they can enter through orifices like mouth, nose, rectum, urethra, or vagina.[14–16]

A PubMed search for vaginal leech infestation from 1983 to 2016 was performed. The search terms were "vaginal AND leech" and "vulvar AND leech." Articles in English were included. There were 16 articles reporting 32 cases of vaginal infestation in patients with an age range of 2-75 years. Most of them were from Thailand and Bangladesh, and the rest were from India, Ethiopia, Sri Lanka, Oman, Eritrea, Iran, and Turkey. These countries are located in Africa and south Asia. All patients had a history of swimming, playing, or bathing in rivers or ponds. Most of these patients were children (Table 1) and there were 5 cases of postmenopausal elderly women.[24–29] In most cases, only 1 leech was present, but in 2 young women,[30] there were 3 and 2 leeches attached to the vaginal wall, respectively. Except for a few cases that were referred early to the hospital, the rest of them were in unstable condition because of significant bleeding and required blood transfusion. Hence, early detection and removal of the leech from the vagina is of utmost importance. The longest duration of symptoms and bleeding before diagnosis was in a postmenopausal woman who had bleeding for 3 months.[25]

Table 1
Review of Case Reports of VB Due to Leech Infestation in Children

Reference	Age, years	Hemoglobin, g/dL	Pulse rate	History of swimming	Leech site	Transfusion	Method of removal
Saha, Roy[17]	5	9.5	110	History of bath in pond 2 hours earlier	Posterior wall of vagina at the junction of the middle and lower thirds	No packed cells	Extraction with forceps
	7	7.5	120	Bath in river	Left lower half of the vagina at approximately 3 cm above the introitus	1 U packed cells	Vaginal irrigation with 0.9% saline
Karunaratne and Wijerathne[3]	10	10	Normal	Soon after swim in a local irrigation canal	–	–	Leech was removed by a relative using bare hand while the leech was entering the vagina
A Ibrahim, H Gharib[18]	9	7.3	Normal	Swimming in river	–	250 mL of packed cells	Vaginal irrigation with 0.9% saline
Saha and Nagi[19]	2	7	State of shock, filiform pulse	Playing in a waterlogged paddy field, parents saw the leech entering her genitalia	In peritoneum	350 mL blood transfusion	Leech was found dead in peritoneal cavity during laparotomy
Aribarg and Phupong[20]	10 Girls between 5 and 10 years old	–	–	–	–	–	–
Habtai, Teclebirhan[21]	6	10		Swimming in river before symptoms	Vagina	No	Vaginal irrigation with 0.9% saline
Hannan and Hoque[16]	6 Girls between 4.5 and 11 years old	–	–	–	–	–	3 of them were removed using forceps and the rest were dislodged using vaginal irrigation with 0.9% saline
Aali[22]	12	8.5	85	Travel to rural area 2 days before bleeding	Posterior fornix of vagina	–	Extraction with forceps
Prasad and Sinha[23]	16	–	–	–	Uterus	–	After cervical dilation leech body came out with blood, his head fragment was out after curettage
The current case	2	9.4	110	Swimming in pond water the day before bleeding started	Introitus of vagina	No	Vaginal irrigation with 0.9% saline during vaginoscopy

VB, vaginal bleeding.

In most cases, the leech was removed using saline irrigation or extraction using forceps. Because there is the possibility of rupture of the leech with risk of infection, the pulling maneuver must be carried out very gently. Irrigation with 0.9% saline irritates the leech and dislodges the worm out of vagina. In 2 of the reported cases, the leech was so firmly attached to the mucosa that the physician had to inject lidocaine into the body of the leech to paralyze it, which could then easily be removed using forceps.[25,27] In the current case the leech dislodged during vaginoscopy with the flow of normal saline.

After detaching the worm from the vagina, bleeding stops spontaneously and no local treatment is needed. In all reported cases (Table 1), no infectious complications were mentioned, and so it seems that prophylactic antibiotic therapy is not needed.

In vaginal leech infestations the leech usually remains in the vagina, but there are 2 case reports of leech migration to the uterus[23] and peritoneal cavity[19] with severe intra-abdominal bleeding. There are 3 case reports of vaginal leech infestation from Iran; 2 of them were in post-menopausal women from Mashhad and Isfahan,[25,29] and the other was from Kerman in a 12-year-old girl.[22] The current case is also from Mashhad.

In summary, when confronting VB in a young girl, a detailed history and a thorough examination are necessary. Despite its rarity, leech bite should be considered in the differential diagnosis, especially if there is a history of swimming in rivers or ponds. Examination with the patient under anesthesia might play an important role in making a correct diagnosis and in treatment.

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