

Leech Therapy in Iranian Traditional Medicine

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Introduction

Leech therapy (LT) has a long history in medicine [1]. In Greek medicine, medicinal leech was first introduced by Hippocrates. However, the popularity of LT was reinforced by the ideas of Galen, who classified LT as an efficient procedure in medicine [2]. Nowadays, although it is not well accepted by modern medicine, LT is still used to treat venous congestion in the settings of microvascular replantation, reconstructive surgery, and traumatology [1]. On the other hand, new investigations on LT have presented its significant effect on different kinds of chronic diseases [3]. The major recommended mechanisms for LT are the anti-inflammatory, anticoagulant, analgesic, antimicrobial, and vasodilator effects as well as skin-wound healing of some enzymes, such as hirudin, calin, destabilase, bdellins, and eglins [4, 5].

In Iranian traditional medicine (ITM), LT was a common medical procedure. In Persian, the leech is called 'Zaloo', 'Zard', 'Zardeh' or 'Divche', and LT is called 'Ersal-e-Alaq' or 'Zaloo Andakhtan'. It was believed that leeches drew blood from deeper sources than wet cupping [6–8]. This method is still in use by ITM practitioners and specialist physicians in ITM. In this study, we will report leeching procedures and those medical potentials which have already been used by ITM practitioners.

Methods

Data for this review were collected from 4 sources: Iranian traditional treatises, current texts on leeching therapy, practitioner interviews, and online database searches. For technical notes, the main traditional treatises, such as 'Zakhire-e-Kharazmshahi' (Jorjani, 1110 AD) [7], 'Kholasat al-Tajarob' (Bahaodolerazi, 1501 AD) [9] and 'The Canon of Medicine' (Avicenna, 1024 AD) [6, 10], were used as well as practitioners experiences in LT. For gathering information about current use of medicinal leech, practitioners of ITM from Shiraz city were interviewed with a specially-designed structured questionnaire (WH (who, what, where, why, which, when) questionnaire containing 15 questions and a checklist containing 125 choices) and data sheet. Afterward, the exact anatomical location that practitioners use in LT for each disease was determined [8, 11].

Result and Discussion

In ITM, like in most of the other traditional systems of medicine, medicinal leech have been used in the treatment protocol of different kinds of diseases. However, ITM has its own specific rules from selecting leeches to monitoring patients after LT. The following information was gathered from ITM references [6, 7, 9, 10] as well as personal communication with 10 current ITM practitioners.

Leech Selecting

According to traditional texts, the best type of leech should be collected from freshwater. It should resemble a rat's tail with a thin and small head, red abdomen, and green back bone [6, 7, 9]. The Persian leech species used by ITM practitioners is *Hirudo orientalis* sp.n., based on the description by Utevsky and Trontelj [12].

Festschrift in honor of the 800th birthdate of Hakim Ghotboddin Shirazi, famous Persian polymath.

Table 1. Usage of leech therapy by practitioners for different diseases in Iranian traditional medicine

Category/disease	Leeching site ^a	Category/disease	Leeching site ^a	Category/disease	Leeching site ^a
<i>Addiction</i>		herpes zoster	SD	chronic pain	SD
Addiction	2, 3, 6, 19	hives	SD	discopathy	4, 5, 7, 9
Drug addiction	2, 3, 6, 19	ichthyosis	2, 3, 6, 19, SD	fatigue syndrome	2, 3, 6, 19
Smoking	2, 3, 6, 19	itching	2, 3, 6, 19	fracture	lower and SD
<i>Cardiovascular</i>		keloid	SD	gangrene	around SD
Arrhythmia	2, 3, 6, 19	lipoma	2, 3, 6, 19, SD	gout	2, 3, 6, 19, SD
Atherosclerosis	2, 3, 6, 19, heart	measles	3	hematoma	SD
Buerger's disease	9, SD	nail lichen planus	SD	knee arthritis	SD
Chest pain ^b	2, 3, 6, 19, heart	pemphigus	2, 3, 6, 19, SD	low back pain	4
Coronary arteries disease ^b	2, 3, 6, 19, heart	profuse perspiration	2, 3, 6, 19	migrating pain	2, 3, 6, 19
Deep vein thrombosis	SD	pruritus	2, 3, 6, 19, SD	multiple sclerosis	2, 3, 6, 19
Hypertension	2, 3, 6, 19	psoriasis	2, 3, 6, 19, SD	muscle spasm	SD
Hypotension	2, 3, 6, 19	reconstructive surgery	SD	osteoarthritis	SD
Migraine	2, 11, 13	rubella	3	rheumatoid arthritis	2, 3, 6, 19, SD
PVC	2, 3, 6, 19	scarlet fever	3	sciatica	4, 5, 7, 9
Phlebitis	SD	shingles (herpes)	3	shoulder arthritis	SD
Pulmonary edema	2, 3, 6, 19	smallpox	3	<i>ophthalmic</i>	
Tachycardia	2, 3, 6, 19			pterygium	11, 13
Varicosis	SD	<i>endocrine</i>		<i>reproductive</i>	
<i>Central nervous system</i>		diabetes	2, 3, 6, 19	amenorrhea	4, 9
Bell's palsy	2, 11, 12	diabetes neuropathy	above and SD	BPH	4, scrotum
Cerebral tumor	1, 2	emaciation	2, 3, 6, 19	dysmenorrhea	9
Cerebrovascular accident	1, 2	growth retardation	3, 8, 9	hot flashes	2, 3, 6, 19
Depression	2	hypercholesterolemia	2, 3, 6, 19	hypersexuality	2, 3, 6, 19
Hearing loss	2	hyperthyroidism	2, 3, 6, 19, SD	hypomenorrhea	4, 9
Insomnia	2	hypertriglyceridemia	2, 3, 6, 19	menorrhagia	4, 9
Manic depression	1, 2	hyperuremia	2, 3, 6, 19, kidney	oligomenorrhea	4, 9
Mental disorders	1, 2	hypothyroidism	2, 3, 6, 19, SD	ovarian cyst	4, 9
Neuralgia	SD	<i>GI</i>		premature ejaculation	scrotum and urinary bladder
		fistula	anus		
Neuropathy	SD	<i>GI disorders</i>	16	spermaturia	scrotum and urinary bladder
PTSD	1, 2	hemorrhoid	anus	<i>respiratory</i>	
Stammer	14	intestinal polyp	anus	allergic asthma	2, 3, 6, 19
Tension headache	2, 11, 13	thrush	anus	allergy	2, 3, 6, 19
Trauma	SD	<i>hematological</i>		asthma	2, 3, 6, 19
Tinnitus	2	anemia	3, 15, 18	chemical gas poisoning	2, 3, 6, 19
Vertigo	2	drug poisoning	3	frequent cold	2, 3, 6, 19
<i>Cutaneous</i>		polycythemia	2, 3, 6, 19	influenza	3
Abscess	around SD	<i>hepatogenic</i>		mumps	3
Acne		Stevens Johnson syndrome	2, 3, 6, 19	nasal polyps	13
Body	3	<i>infection</i>		pneumonia	3
Facial	2, 14	gingival infection	14	sinusitis	10
Bedsore	around SD	onychomycosis	nails	<i>urinary</i>	
Bites (inflammatory stage)	around SD	recurrent ear infection	2	enuresis	urinary bladder
Burn injuries	around SD	septicemia	anus	nephritic syndrome	2, 3, 6, 19
Cutaneous leishmaniasis	around SD	<i>musculoskeletal</i>		nephrolithiasis	2, 3, 6, 19
Dermatitis	SD	atrophy	SD	<i>miscellaneous</i>	
Eczema	SD	cellulitis	around the toll	transplantation	site of graft
Gingivitis	14				

^aLeeching site based on figure 1; ^bAfter treatment of acute stage; BPH = benign prostatic hypertrophy; GI = gastrointestinal; PTSD = posttraumatic stress disorder; PVC = premature ventricular contraction; SD = site of disease.

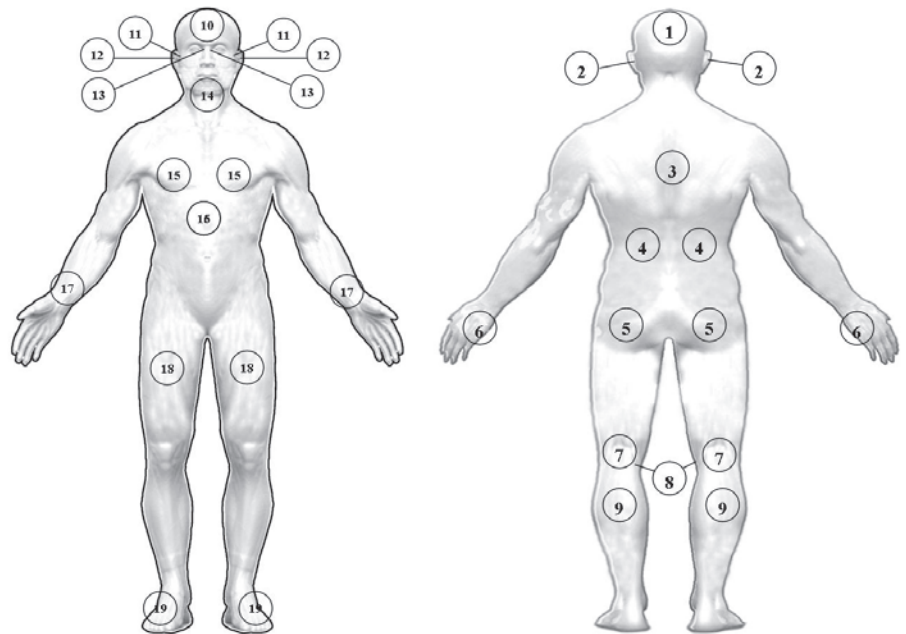


Fig. 1. Schematic representation of leech therapy map of the human body. The anatomic position of each site is as follows: 1: Squamous part of the occipital bone and lambda; 2: Asterion (parietomastoid suture); 3: Mid-sagittal plane, between the two medial borders of the scapula on the T3-T5 vertebrae; 4: Right or left scapular line on the 12th rib; 5: Right or left upper lateral quadrant of the gluteal region; 6: Dorsal interosseous muscles of hand; 7: Popliteal fossa; 8: Upper part of the knee joint; 9: Posterior upper third of the leg; 10: Bregma; 11: Preauricular skin pit; 12: Ear helix; 13: Lacrimal sac; 14: Submental area; 15: Pectoralis major muscle; 16: Rectus abdominis muscle; 17: Flexor digitorum superficialis muscle; 18: Anterior middle third of the thigh; 19: Region between the calcaneus and lateral malleolus.

Pre-leeching Procedure

Before attaching the leech, the area is shaved and washed with odorless soap and water or a solution of borax and rinsed with distilled water. Leeches should be collected just one day prior to their use. Similar to a medical procedure, the patient is advised to take a light semi-solid diet prior to the procedure. The physician should ask the patient whether they are taking vitamins (e.g., vitamin E, C or K), herbal supplements (e.g., garlic, ginger, ginkgo, and ginseng preparations), or medicines (especially those that increase the risk of excessive bleeding or reduced immune response, such as aspirin, dipyridamole, clopidogrel, heparin, warfarin, and nonsteroidal anti-inflammatory agents) to determine whether there are any contraindications with LT.

Leeching Procedure

The affected part to be treated is rubbed until redness appears. Based on the age of patients, their type of diseases, and their blood factors, 3–5 leeches are applied to each site. If the leech is reluctant to attach, a tiny droplet of blood may be smeared on the part to be treated and then the leech is applied (empirical knowledge).

Monitoring the treatment site is performed every 15 min to see if there is leech detachment or migration and as described in the literature [3], to check for a drop in temperature due to vascular disorders (every 30 min).

Post-leeching Procedure

Usually, leeches are allowed to detach spontaneously, but in special conditions, such as longer than 120 min, leech feeding time or non-stable conditions, table salt, borax, heat, alcohol or betadine solution is used to detach the leech. The used leeches should be destroyed by placing them in 70% alcohol solution. After leech detachment, the area is treated with honey or turmeric and dressed using alcoholic pad for 24 h. Normally, bleeding is continued up to 4–5 h.

Therapeutic Applications of Leech Therapy

Medical application of LT by ITM practitioners is listed in table 1. All data in this table are from empirical knowledge of ITM practitioners. LT is currently used for 125 different diseases. It is prescribed for a wide array of diseases and disorders, including cardiovascular, central nervous system, cutaneous, endocrine, gastrointestinal, hematological, hepatogenic, musculoskeletal, ophthalmic, reproductive, respiratory, and urinary disorders as well as infection and addiction. LT is mostly used for cutaneous diseases. Figure 1 shows a schematic LT map of the body surface according to table 1. Our data showed that in LT 4 specific sites (asterion (parietomastoid suture); mid-sagittal plane, between the 2 medial borders of the scapula on the T₃–T₅ vertebrae; dorsal interosseous muscles of hand; region between the calcaneus and lateral malleolus) are used more often than other sites. Traditional practitioners believe that 2, 3, 6, and 19 are proper sites for systemic LT, vascular dilution, and body detoxification.

Conclusion

LT is still in use by medical practitioners. Despite having been in recorded medical use for centuries, research continues to be conducted into this procedure. Traditionally, LT is used most often in dermatological disorders, however, in modern LT it is often used in the settings of localized venous congestion associated with flap reconstructions and surgical replantation. Probably the most serious complication of LT is infection. Infectious complications can be minimized by obtaining leeches from appropriate commercial sources and utilizing effective antibiotic prophylaxis (in case of patients with immune suppression cephalosporins, aminoglycosides, fluoroquinolones, tetracyclines or trimethoprim are prescribed). Moreover, physicians should be careful to manage un-

wanted bleeding, especially in cases where anticoagulant therapy is being used. Lack of standard procedure for LT and precise equivalency of traditional names of diseases in the texts with those having conventional names are 2 limitations of this study.

ITM data on LT could be helpful in future studies for evaluating LT safety and efficacy. Moreover, advantages and disadvantages of LT should be evaluated for management of current complicated diseases.

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