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Review Article

Venesection (Fasd): Historical Insights and Modern Implications: A comprehensive review

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Abstract

Ilaj bit Tadbeer, a vital therapeutic approach in the Unani system of medicine, focuses on modifying six essential elements to restore health. This approach encompasses various regimental therapies such as cupping (Hijāma), leeching (Ta'liq or irsal-e- 'Alaq), venesection (Fasd), massage (Dalk), irrigation (Natūl), emesis (Qay'), diuresis (Idrār-i-Bawl), diaphoresis (Tariq), concoction and purgation (Mundij and Mu'shil therapy), medicated steam (Bukhoor), cauterization (Kaiyy), and enema (Huqna). Fasd is a crucial regimen in Ilaj Bit Tadbeer, serving as a method to eliminate morbid material from the body to treat diseases or maintain good health. With a history of almost 3000 years, Fasd has been effectively utilized in treating various ailments across different eras. Although venesection, or Fasd, has a historical significance, its modern application has declined due to the lack of scientific validation. This review aims to explore the historical context, therapeutic applications, contraindications, and contemporary scientific evidence of Fasd, emphasizing its potential in modern medicine.

Keywords: Ilaj bit Tadbeer, Unani medicine, Fasd, venesection, therapeutic applications, scientific evidence.

Introduction

Ilaj bit Tadbeer is one of the important mode of treatment in Unani system of medicine. Ilāj bi'l-Tadbīr is consisted with two words of Arabic language i.e. "ilāj" which refers treatment and "tadbīr" means 'regimen'. Ilaj bit Tadbeer is defined as modification of asbab sita zarooriya (six essential elements) which includes hawā-i-muheet (atmo- spheric air), makoolāt va mashroobāt (food and drink), harakat-o-sukūn badnī (physical activity and repose), harakat-o-sukūn nafsanī (mental activity and repose), nawm-o- yaqza (sleep and wakefulness) and ehtibās-o-istifrah (retention and elimination).¹ The causes of diseases in USM are basically classified into three categories viz. (i) s'ū-i-mizāj (dystemperament), (ii) sū-i-tarkeeb (abnormal composition), and (iii) tafarrūq-i-ittisāl (derangement). S'ū-i-Mizāj refers presence of disease due to impairment in the temperament of an organ, system or whole body. S'ū-i-

mizāj is further classified into two types viz. (i) s'ū-i-mizāj sāda (dystemperament not associated with morbid humours), (ii) s'ū-i-mizāj māddī (abnormal substantial temperament). In s'ū-i-mizāj māddī, morbid matter may be present inside the vessel, cavity, interstitial space, potential cavities or adherent to the surfaces. Various regimes of ilaj bit Tadbeer are advocated for the elimination of this morbid matter like purgation, vomiting, perspiration, cupping, leeching, and venesection etc. Fasd (venesection) is one of the important regimes of ilaj bit Tadbeer for eliminating this morbid matter and restoring humoral balance.²

It offers vast opportunities in the treatment of different illnesses. Fasd, defined as a special method of blood-letting in which a blood vessel is incised and a certain amount of blood is removed from the body, was commonly practiced in the past in Unani medicine for a wide range of illnesses. However, in the modern era, its

use has been limited to a few conditions only due to a lack of scientific evidence. Yet, the potential of Fasd in modern medicine is vast, and with further scientific studies, its efficacy and therapeutic applications could be validated, offering new hope and inspiration in the field of medicine. In this review, we are describing the historical aspect, therapeutic applications, contraindications, and various scientific evidences related to Fasd (venesection).

Brief Historical perspective of Fasd

The tradition of Fasd (phlebotomy/Venesection) has a rich history in the Unani system of medicine, originating approximately 3000 years ago with the Egyptians and Mesopotamians, as evidenced by the written and pictorial depictions of Fasd in their literature. This practice then continued with the Greeks, Romans, Arabs, and Asians, eventually spreading throughout Europe during the Middle Ages and the Renaissance. In ancient Rome, Galen popularized Fasd and distinguished arterial blood from venous blood, proposing the theory of oxygenated and deoxygenated blood. He demonstrated that blood, not pneuma, flowed through the arteries. The practice of Fasd reached its peak in 19th-century Europe, where it was strongly advocated and recommended for various conditions such as fever, hypertension, pulmonary inflammation, and pulmonary edema. Ancient Greek pottery showcases a doctor conducting bloodletting, and both Hippocrates and Galen advocated for the practice of Fasd to treat different illnesses. Galen's belief in the dominance of blood among bodily humors led him to endorse the removal and treatment of blood through bloodletting and purging.³

Ancient Greek vases display a physician carrying out bloodletting, and both Hippocrates and Galen strongly endorsed the practice of Fasd for treating various diseases. Galen's conviction in the predominance of blood among bodily humour led him to advocate for the removal and treatment of blood through bloodletting and purging.⁴

William Harvey advocated for the use of bloodletting as a viable treatment for various diseases. He stated that bloodletting has a significant positive impact on many illnesses and is considered one of the most effective general remedies. He emphasized that bloodletting is a primary and effective method of treatment, particularly in cases where the body's blood is in a diseased state or

there is an excess of blood. Harvey believed that the timely removal of a certain amount of blood can alleviate patients from severe and life-threatening illnesses.³

General Indications of venesection in the Unani system of medicine

- Individuals who are susceptible to developing illnesses as a result of an excess of blood, such as women who have experienced a suppression of menstrual blood or those who are predisposed to sanguineous conditions like sciatica, gout, and arthritis, as well as the cessation of bleeding from haemorrhoids or individuals suffering from hemoptysis due to the breakdown of lung veins, Sara (Epilepsy), Sakta (Coma), Malencholea, Khunaq (Diphtheria), inflammation of internal organs, and conjunctivitis due to an excess of blood.⁵
- Those who are affected by Amraz-e-damvia (diseases caused due to dominance of blood).⁶⁻⁸

Contraindication of Fasd (venesection) in Unani system of medicine

- Less than 14 and greater than 70 years of age
- Febrile illness
- Extremely cold and hot climate
- Patients of amraze barida
- After meal
- In pregnant women
- In feeble and anemic patients
- Obesity
- Weakness of the stomach and liver
- Substance abusers
- Severe Indigestion
- In hard worker labours
- Just after sexual intercourse
- During Severe pain
- In paralysis, apoplexy and tuberculosis except if cause is sanguine
- Insomnia^{6,9,10}

Therapeutic application (venesection) of Fasd in USM

This therapeutic approach involves the incision of particular veins in specific conditions at precise locations on the body in order to remove blood containing harmful substances.

Vein or artery	Diseases indicated
<i>Iraq Al-Yāfukh/</i> a branch of parietal vein	Migraine Headache Scalp wound Epilepsy Eye diseases ⁶
<i>Warid al-Jab'ha/</i> frontal vein	Chronic headache Eye pain, gurba Migraine ⁶ Brain debility Boils Leprosy Syphilis ^{11,12}
Warid-i-Sudghi/ branch of cephalic vein that appears behind ear qanoon	Conjunctivitis ⁶ Ophthalmia ¹³ Panus Jumra Other diseases of face tasreef ¹³
Warid-i-Mankharain	<i>Waram</i> of nose chronic headache chronic pain in eye ¹⁴ ocular congestion ¹²
Warid-i-Arnabah/ nasal vein	Leprosy ¹⁰ High grade fever ¹³ Severe headache ¹³ Alopecia ¹³ Redness of nose ¹³ dark spot of face ⁶ <i>Bawasir Al-Anf</i> ^{7,9,12,14,15} carcinoma of nose <i>Waram-i-Lithā</i> (gingivitis) bad smell of mouth ¹⁵ pain in eye ^{7,15} irritation of eye ^{10,12} sty ⁷
IraqTaht-Al-Khushsha/ inferior mastoid vein	Chronic headache Chronic vertigo ^{9,12,14,16,17,}
WaridKhalfAl-Udhun/ post auricular vein	cataract ^{6,9,12,14}

	<p>small eruptions of scalp, boils and wounds of head ^{7, 9,11,12, 14,15}</p> <p>wounds of ear ^{10,16,12}</p> <p><i>Sa'fa</i> and <i>Ganj</i> ^{7,11,15}</p> <p><i>Nazlā-i-Muzminā, Shaqiqā</i> ¹¹</p> <p><i>Waja'ur-Raas, Khudha, Dawār</i> ¹⁸</p>
Chahār Rag/ labial veins	<p>Boils, Stomatitis, Gingival pain, Diseases of lips^{13,19}</p> <p>Lip ulcer ²⁰</p> <p>Toothache, Foul smell, loosening of teeth ^{19,20}</p> <p>Pyorrhea ¹³</p>
Warid That-Al-Lisān/ sublingual veins	<p>Congestion of head ⁹</p> <p>Epilepsy ⁹</p> <p>Facial palsy ⁹</p> <p>Diphtheria ⁶</p> <p>Glossitis ⁹</p> <p>Jaundice ²¹</p> <p>Ranula ⁹</p> <p>Quincy ^{13,19}</p> <p>Odontology ^{9,20}</p> <p>Uvulitis ¹³</p>
Warid Al-Anfaqā/ inferior labial vein	<p>Halitosis ^{6, 9, 12,15,16,17,18}</p>
Warid-i-Widajayn/ jugular vein	<p>Asthma</p> <p>Intial stage of varicosis</p> <p>Intial stage of leprosy</p> <p>Pytriasis nigera</p> <p>Chronic ringworm</p> <p>Chronic wound</p> <p>hoarseness^{6,12,14,18}</p> <p>diphtheria ^{6, 12,14,16,}</p>
Warid-i-Labbah/ anterior jugular vein	<p>diseases of the cardiac end of stomach^{6,9,12,17,18}</p> <p>Acute fever qanoon ⁹</p>
Warid-i-Qifāl/ cephalic vein	<p>Diseases of brain due blood congestion, coma, giddiness, nightblindness, epistaxis, scrofula ⁹</p> <p>Meningitis, urticaria, frontal headache, vertigo, dysphagia, conjunctivitis,</p> <p>Nasal polyp, rannula, crack of lips, boil on lips, alopecia ²⁰</p> <p>Epilepsy, migraine, melancholia, corneal ulcer, hepatitis ⁶</p> <p>Diphtheria, throat pain, glossitis, hemoptysis ²²</p>
Warid-i-Bāsaliq/ Basilic vein: Some physicians believe that Fasd of this particular vein can be advantageous in treating various illnesses that may manifest in different parts of the body, ranging from the neck down to the foot. ^{12,23,26}	<p>Palpitation, du'fi qalb(weakness of heart),pericardial effusion, severe vomiting, acute hepatitis, liver obstruction, liver cancer ²¹</p>

	Conjunctivitis, pleurisy, gastric pain, volvulus, hepatalgia, metritis, nephritis, heamaturia, cystitis, proctitis ⁶ Melancholia, dysnea, back pain ⁹
Warid-i-Ibti/ Axillary vein	Primarily, it extracts blood from the lower extremities, ⁶ and the advantages of Fasd in this context are akin to those observed in Bāsaliq. ^{16,23} The practice of venesection in this vein proves advantageous for ailments affecting the abdominal organs, lower body regions, ²⁶ lungs, thoracic cavity, diaphragm, and is also beneficial in cases of bronchitis. ⁷
Warid-i-A'khal / median cubital vein: According to Razi, conducting Fasd in this vein possesses significant advantage, particularly when the objective is to facilitate the drainage of blood from the entire body, as the vein exhibits a cumulative effect similar to that of Bāsaliq and Qifāl.	Melancholia, meningitis ²² Asthama ¹⁹ Hepatitis ^{6,19} Eczema ²⁰ Acute gastritis, volvulus ⁶
WaridHabl-uz-Zira'/ accessory cephalic vein	The vein splits into two branches, Fasd in the left branch benefiting the spleen and heart, and the right branch beneficial to the liver. ¹⁸ The Fasd of this vein also helps purify the organs in the neck and above. ^{24,25}
Warid-i-Usailim /3rd dorsal metacarpal vein	Hepatalgia, acidity ^{19,20} Hepatitis, splenic pain ²¹ Hot discriasis of spleen, asthma ⁶ Leprosy, splenomegaly ²⁰ Angina pactoris ¹⁹
Warid-i-Sāfin / saphenous vein: It drains blood from those organs which lies below the liver ^{9,12,16,17,23}	Epilepsy, migraine, coma, melancholia, hemoptysis, volvulus, colitis, cystitis ⁶ Amenorrhoea, gastric ulcer ¹⁰ Alopecia, renal colic, sciatica ⁹ Itching in thigh, scrotum, penis ¹⁹ Orchitis ^{20,22}
Warid-i-'Irq-un-Nasā : According to Unani scholars, Fasd in 'Irq un-Nasā are nearly comparable to those observed in Sāfin. ¹⁴ However, it is noted that 'Irq-un-Nasā is more beneficial for Fasd in sciatica, while Sāfin holds greater significance for Fasd in the treatment of other ailments. ^{12,14,26}	sciatica ^{6, 7, 15,16,17,24, 25, 26} hip pain ^{11,15,24} pain of buttocks ⁶ <i>Niqris</i> (Gout) ^{16, 17,18,23,24,25} Varicose Vein ^{11,16, 17,24,25} elephantiasis. ^{16,17,24}
Warid-i-Mābiḍ-ur-Rukbā /popliteal vein	Cystitis, piles, nephritis, renal colic, lumbar pain ⁹ Utrine pain, visceral pain, joint pain ¹² Filariasis, rectal pain ²⁰
Warid Khalf-al-Urquḍ / branch of internal saphenous vein	Amenorrhoea, disease of anus, gout, varicosis, sciatica ⁶

Scientific Studies in Favour of Therapeutic Phlebotomy or Venesection

Polycythaemia:

Patients diagnosed with PV are prone to experiencing thrombotic events, such as cardiovascular and cerebrovascular accidents, as well as arterial and venous thromboembolism. Additionally, the progression of the disease may be complicated by myelofibrosis and/or transformation into acute myeloid leukaemia/myelodysplastic syndrome. A primary treatment objective is to mitigate these thrombotic events, with treated patients currently exhibiting a median survival exceeding 10 years.²⁷ Numerous clinical trials have explored the efficacy of different therapeutic regimens, consistently highlighting the significance of therapeutic phlebotomy. Notably, the pivotal PVSG (Polycythaemia Vera Study Group) prospective trial involved 400 patients who were randomly allocated to receive phlebotomy alone, chlorambucil with phlebotomy as needed, or radioactive phosphate (32P) with phlebotomy as needed, and were subsequently monitored for two decades. The median survival rates were 13, 11, and 9 years for patients assigned to phlebotomy alone, radioactive phosphate, and chlorambucil, respectively.^{28,29} The study revealed a higher incidence of thrombosis in the phlebotomy-alone group, particularly within the initial 3 years, compared to the 32P treatment arm. Nevertheless, patients treated solely with phlebotomy exhibited a reduced occurrence of haematological malignancies and solid tumors relative to those receiving myelosuppressive therapy. The authors concluded that phlebotomy yielded the most favorable overall survival outcome, albeit at the cost of an elevated risk of thrombosis during the initial 3-year period.^{28,29} To address thrombosis-related concerns, a subsequent trial was conducted, wherein patients were administered high-dose aspirin and dipyridamole alongside phlebotomy. However, this combination led to a heightened incidence of gastrointestinal hemorrhages.³⁰ Conversely, low-dose aspirin (81 mg) was found to diminish the risk of various thrombotic events. For maintenance therapy in high-risk patients or those intolerant to other treatments, hydroxyurea may be considered.³¹

Hemochromatosis

Therapeutic phlebotomy serves as the primary treatment for individuals diagnosed with hereditary hemochromatosis; however, it is important to note that not all associated signs and symptoms are amenable to reversal. The evaluation of the clinical efficacy of therapeutic phlebotomy has been challenging due to the absence of randomized controlled trials addressing this issue. A comprehensive survey involving 2,851 patients with haemochromatosis aimed to examine the symptoms and the effects of therapeutic phlebotomy. The findings revealed that 86% of participants experienced some degree of symptom relief following phlebotomy, with an average duration for noticeable improvement being 39±67 weeks. Conversely, fewer than 15% of respondents expressed a negative view regarding the

treatment.³² The most frequently reported symptoms included severe fatigue (54.4%), joint discomfort (43.5%), sexual dysfunction or decreased libido (25.8%), skin discoloration (25.7%), palpitations (23.8%), depressive symptoms (20.8%), and abdominal discomfort (20.3%). Notably, over half of the participants indicated an improvement in skin discoloration and severe fatigue (58.8% and 54.4%, respectively), followed by improvements in depressive symptoms (40.8%), abdominal discomfort (22.3%), sexual dysfunction or decreased libido (12.7%), joint discomfort (9.2%), and palpitations (6.2%). Additionally, liver function tests and hepatic fibrosis may show signs of improvement post-phlebotomy.³³

Porphyria cutanea tarda

Therapeutic phlebotomy has traditionally been regarded as the primary treatment for the majority of patients diagnosed with porphyria cutanea tarda (PCT). In cases where phlebotomy is not feasible, hydroxychloroquine serves as an alternative therapeutic option.³⁴ As noted by Rocchi et al., it is recommended that 450 mL of whole blood be extracted during each phlebotomy session, with these sessions occurring biweekly until the patient's hemoglobin concentration falls below 11 g/dL or the serum ferritin level drops below 20 ng/mL, which is near the lower threshold of normalcy. Typically, patients may require approximately six months to reach remission; however, some clinical improvements can be observed as early as three months following the initiation of phlebotomy.³⁵ While hydroxychloroquine has demonstrated greater efficacy than phlebotomy in reducing porphyrin synthesis, it is important to note that patients receiving hydroxychloroquine exhibited more severe liver disease.³⁶

Sickle cell disease

Individuals diagnosed with sickle cell disease (SS or SA) may experience advantages from phlebotomy, either as a standalone treatment or in combination with hydroxyurea. The process of phlebotomy effectively lowers blood viscosity by decreasing haemoglobin levels, which subsequently leads to a reduction in the mean corpuscular haemoglobin concentration. This reduction is significant as it diminishes the polymerisation of HbS molecules associated with sickle cell disease. In a study conducted by Bouchair et al. involving seven pediatric patients with sickle cell disease who frequently experienced painful crises, it was found that regular phlebotomy sessions over a four-year duration resulted in a marked decrease in hospital stays, from an annual total of 144 days to 20, 5, 6, and 1 day, respectively, across the four years of monitoring. The average hemoglobin concentration decreased from 10.7 g/dL prior to phlebotomy to approximately 9 g/dL following the procedure, with no reported adverse effects. Nonetheless, it is important to note that this investigation was limited by its small sample size, and phlebotomy is likely to be beneficial primarily for patients exhibiting elevated hemoglobin levels. Consequently, the findings of this study do not permit definitive conclusions, and further research involving a

larger cohort of patients is necessary to validate these results.³⁷

Hypertension

The hemodynamic consequences of venesection involving the removal of one unit (450 ml) of blood over 9 minutes were assessed through non-invasive methods in a cohort comprising 14 healthy individuals and 18 patients diagnosed with coronary heart disease or hypertension. The procedure resulted in notable decreases in both supine and standing systolic and diastolic blood pressure, stroke volume index, and cardiac index, alongside an elevation in standing heart rate across both patient groups. Furthermore, no significant disparities were noted in the responses between individuals with cardiovascular disease and those without.³⁸

Sciatica

Fasd or venesection therapy may be used as an effective mode of treatment for the management of sciatica. Three cases were chosen to assess the impact of Fasd on the management of acute symptoms associated with Irqunnasa or sciatica. The Fasd procedure was performed around the saphenous vein near the medial malleolus of the affected limb on the first and fifth days, continuing for a duration of one week. Patient evaluations were conducted both prior to and following the intervention, utilizing objective measures such as the visual analog scale (VAS), Oswestry Disability Index (ODI), and the straight leg raising test (SLRT). The results indicated a notable enhancement in symptoms, objective measures, and the overall condition of the patients. Throughout the study, no adverse effects were reported.³⁹

Osteoarthritis

This research aimed to investigate the effectiveness of the traditional Unani practice of Fasd (Venesection) in the treatment of Osteoarthritis. A sample of 40 Osteoarthritis patients was randomly assigned to two groups, each consisting of 20 individuals: a control group and a test group. The control group received Unani herbal medications, while the test group underwent the same Unani treatment supplemented with Fasd over six weeks. Evaluations of safety and efficacy were conducted at baseline and during the final follow-up. The application of Fasd demonstrated statistically significant improvements in pain reduction and joint mobility compared to the control group, without any reported adverse effects.⁴⁰

Conclusion

Fasd, with its extensive history in treating ailments such as hypertension and gastrointestinal disorders, has been endorsed by historical figures like Galen and William Harvey. Contemporary studies indicate that therapeutic phlebotomy can significantly benefit patients with conditions like polycythemia vera, hereditary hemochromatosis, and sickle cell disease. However, specific contraindications must be observed, including age restrictions and conditions like febrile illness and

anaemia. The evidence suggests that Fasd has considerable therapeutic potential that warrants further scientific exploration. A reintegration of this modality into modern medical practices could offer new treatment avenues for various blood-related conditions, emphasising the need for rigorous clinical trials to establish its efficacy.

Conflict of interest: None

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