



(A review article)

Al-hijamah (wet cupping therapy of prophetic medicine) is promising in the management of viral hepatitis for biochemical clearing of blood and tissues from viruses, inflammatory mediators and immune complexes: towards better preventive and therapeutic outcomes

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(Received 20/2/2023 ; accepted 16/10/2023)

Abstract: There should be a lot of research on prophetic medicine and traditional Arabic medicine. Viral hepatitis is a serious health issue that can lead to liver cirrhosis and hepatocellular carcinoma. In a recently published expert opinion article, the author suggested Al-hijamah (prophetic wet cupping therapy) as a novel biochemical clearance adjuvant treatment for viral hepatitis that excretes viral particles and excess ferritin percutaneously, synergizes pharmacotherapy, enhances antiviral immunity and helps better hepatocellular carcinoma prevention and treatment. Biochemical clearance of serum and tissues induced by Al-hijamah was suggested as a novel evidence-based combination with prophetic medicine remedies. Through the fenestrated skin capillaries, Al-hijamah filters and clears the blood and interstitial spaces from causative pathological substances (CPS) in a pressure- and size-dependent way. According to the scientifically supported Taibah theory, CPS varies from disease to disease depending on the disease etiology and pathophysiology. The three primary stages of Al-hijamah are suction, skin scarifications (called shartat mihjam in Arabic), and second suction, often known as the "triple S" technique. High serum viral particles levels, viral antigens, nucleic acids, inflammatory mediators, free radicals, antigen-antibody complexes, inflammatory mediators, and ferritin are among the CPS of viral hepatitis. Few published research studies supported the ability of Al-hijamah to effectively reduce the viral load in hepatitis patients. High blood ferritin levels in viral hepatitis patients are linked to chronicity, increased necroinflammation, hepatotoxicity, development of cirrhosis, non-responsiveness to therapy, and viremia. Our earlier research supported Al-hijamah's ability to considerably lower serum ferritin and free radicals, boost antioxidant capacity, and enhance natural antiviral immunity, including increasing the immunity via increasing lymphocytes: CD4, CD8 T cell counts, and CD4/CD8 ratio. In conclusion, Al-hijamah is quite promising for treating viral hepatitis.

Keywords: Al-hijamah, Taibah theory, hepatitis viruses, fenestrated capillaries, cupping therapy, and prophetic medicine.

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DOI: 10.12816/0061757

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طباعة ردمد: 1658-7022 / إلكتروني – ردمد: 1658-7014
www.nbu.edu.sa
<http://jnbas.nbu.edu.sa>



(بحث مقالي مرجعي)

الحجامة (العلاج بالكاسات الرطبة من الطب النبوي) واعدة في علاج التهاب الكبد الفيروسي لتنقية الدم كيميائياً و الأنسجة من الفيروسات و المواد الإلتهابية و المركبات المناعية: نحو نتائج وقائية وعلاجية أفضل

صلاح محمد السيد

(قدم للنشر في 1444/7/29هـ؛ وقبل للنشر في 1445/4/2هـ)

مستخلص البحث: يجب أن يكون هناك الكثير من الأبحاث حول الطب النبوي والطب العربي التقليدي. فمثلاً مرض التهاب الكبد الفيروسي هو مشكلة صحية خطيرة يمكن أن تؤدي إلى تليف الكبد وسرطان الخلايا الكبدية. وفي بحث منشور مؤخراً (نوعه رأي خبير)، اقترح المؤلف استخدام الحجامة (العلاج النبوي بالحجامة الرطبة) كعلاج مساعد جديد لتنقية الدم وأنسجة مرضي التهاب الكبد الفيروسي. واقترح المؤلف أن الحجامة تخرج الجزيئات الفيروسية والفيبريتين الزائد عن طريق الجلد، وتتعاون مع العلاج الدوائي، وتعزز المناعة المضادة للفيروسات وتساعد على الوقاية بشكل أفضل من سرطان الكبد والعلاج. كما تعمل الحجامة على تنقية دم المرضى وأنسجتهم كعلاج جديد قائم على الأدلة يقوي علاجات الطب النبوي. ومن خلال الشعيرات الدموية الجلدية ذات الفتحات، تقوم الحجامة بتنقية كيمياء الدم والفراغات الخلوية من المواد المسببة للأمراض (CPS) بطريقة تعتمد على الضغط والحجم. ووفقاً لنظرية طبية المدعومة علمياً، تختلف المواد المسببة للأمراض من مرض إلى آخر اعتماداً على مسببات المرض والفيزيولوجيا المرضية. وشرطة المحجم هي خدوش الجلد السطحية بعد الشفطة الأولى وقبل الشفطة التالية وتسمى التقنية "ثلاثية الحرف ش"، لأن المراحل الثلاث الرئيسية للحجامة هي: شفط ثم شرط ثم شفط. وفي دم مرضي التهاب الكبد الفيروسي توجد مستويات عالية من الجسيمات الفيروسية، وأجسام مضادة للفيروس، وحمض نووي الفيروس، ووسائط التهابية، و شوارد حرة، و مركبات أنتجين-جسم مضاد وزيادة بروتين الفيبريتين. ولقد دعمت بعض الأبحاث المنشورة قدرة الحجامة على تقليل كمية الفيروسات في دم المرضى بشكل فعال لدى الأشخاص المصابين بالتهاب الكبد الفيروسي. وتؤدي مستويات بروتين الفيبريتين العالية في دم مرضي التهاب الكبد الفيروسي إلى جعل المرض مزمنًا وتعزيز التلف الإلتهابي للكبد، وزيادة تسمم الكبد، وصولاً إلى تليف الكبد، وعدم الاستجابة للعلاجات. ولقد أكدت بحوثنا السابقة قدرة الحجامة على خفض نسبة البروتين الحديدي "فيريتين" والشوارد الحرة إلى حد كبير في الدم، مع تعزيز قدرة مضادات الأكسدة، وتعزيز المناعة الطبيعية المضادة للفيروسات، بما في ذلك زيادة عدد الخلايا الليمفاوية المناعية CD4، و CD8، ونسبة CD4 / CD8. وخلاصة البحث، تعتبر الحجامة واعدة جداً في علاج التهاب الكبد الفيروسي.

كلمات مفتاحية: الحجامة، نظرية طبية، فيروسات التهاب الكبد، الشعيرات الدموية ذات الفتحات، العلاج بالكاسات، الطب النبوي.

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DOI: 10.12816/0061757

1. Introduction

Prophetic medicine is the term used to describe the medical knowledge derived from the teachings, deeds, and spoken words (hadeeths) of the Prophet Muhammad, peace be upon him. Al-hijamah (wet cupping therapy of prophetic medicine) is among the most recommended lines of treatment in prophetic medicine. Al-hijamah makes use of the fenestrated skin capillaries resembling the renal glomerular fenestrated capillaries in easing the excretion of causative pathological substances (CPS) including both disease-causing and disease-related substances in the excreted cupped bloody excretion that accumulate in sucking cups put at suitable anatomical sites (Mahmoud, Abou-El-Naga, El-Ghazzawy, Fathy, Nabo, & El Sayed, 2013). Al-hijamah acts as a super-kidney to clear the human body of CPS that include autoantibodies in autoimmune diseases (Baghdadi, Abdel-Aziz, Ahmed, Mahmoud, Barghash, Nasrat, et al., 2015; Obeid, Qari, Aljaouni, Rohaiem, Elsayed, Alsayyad, et al., 2022), excess serum ferritin and

oxidants in thalassemia (El-Shanshory, Hablas, Shebl, Fakhreldin, Attia, Almaramhy, et al., 2018; El Sayed, Abou-Taleb, Mahmoud, Baghdadi, Maria, Ahmed, & Nabo, 2014; El Sayed, Al-quliti, Mahmoud, Baghdadi, Maria, Nabo, et al., 2014; El Sayed, Baghdadi, Abou-Taleb, Mahmoud, Maria, Ahmed, 2014), excess pain-causing substances and edema in carpal tunnel syndrome (Aboonq, 2019), excess serum lipids (El-Shanshory, Hablas, Shebel, Alhadramy, El-Tahlawi, Aboonq, Abdallah, 2020), excess toxins (Benli & Ersoy, 2020) and others. In a recently published expert opinion article, the author suggested Al-hijamah as a novel biochemical clearance adjuvant treatment for viral hepatitis that excretes viral particles and excess ferritin percutaneously, synergizes pharmacotherapy, enhances antiviral immunity and helps better hepatocellular carcinoma prevention and treatment. Biochemical clearance of serum and tissues induced by Al-hijamah was suggested as a novel evidence-based combination with prophetic medicine remedies (El Sayed, 2023).



Figure 1. Set of Al-hijamah: Variable sized disposable plastic cups, and a manual hand-held pump. This helps better biochemical clearance of the serum and tissues from disease-causing substances e.g., viral particles, inflammatory mediators and immune complexes.

Contribution of Arabic medicine in humanity medical literature

Language barriers may hinder the introduction of national medical literature (written in national languages) to the general international medical literature (written in English). "If there is a benevolence (benefit) in any of your medicines, the benefit will be in shartat mihjam (Al-hijamah), honey drink, and a stinge of fire compatible with disease and I do not like to cauterize," said the Prophet Muhammad, peace be upon him. (Hadith no. 5683 in Sahih Al-bukhari book). This can be met frequently in Arabic and Chinese medicine as both were written in national languages. This encouraged the author to write this review article to introduce Al-hijamah and some natural remedies to invite international researchers and research institutions to exert more research efforts towards investigating and validating those remedies commonly used in the Arabic environment. Historically, Arabic medicine benefited from prophetic medicine and translated medical literature of Romans and Greeks then Arabic physicians and scientists improved multidisciplinary health care in the Middle Ages. Modern medicine has deep Arabic roots through the contribution of Arabic scholars particularly in

Al-Andalus, (Spain and Portugal) in establishing the bases of modern medicine (Majeed, 2011; Millán, 2010). Moreover, Loukas et al., reported that descriptions of the human anatomy derived from religious texts e.g., the Qur'an (spoken words of God) and Hadeeths are important sources of humanity's medical literature that should be studied in light of their agreement with modern medical knowledge (Loukas, Saad, Tubbs, & Shoja, 2010). The Islamic and Arabic authors of the medical and scientific literature in the Middle Ages were much known for the Western civilization with the names Razes for Ar-Razi, Avicenna for Ibn Sina, Alhazen for Ibn Al-Haitham, Avenzoar for Ibn Zuhr, Avveroes for Ibn Rushd and others (Masic, 2010a). The earliest book in optics was written by Alhazen (Al-Hassan Ibn Al-Haitham), who discussed the anatomy of the eye, how images are formed within the eye, and the pathways leading to the eyes. Kepler's solution to the picture formation problem was based on those works. Alhazan already established the bases for modern ophthalmological principles including a theory of unconscious inference, the law of equal innervation of the eye muscles and many others (Crombie, 1990; Eastwood, 1986; Howard, 1996; Mawas, Mawas, & Weiss, 1981; Vescovini, 1991).

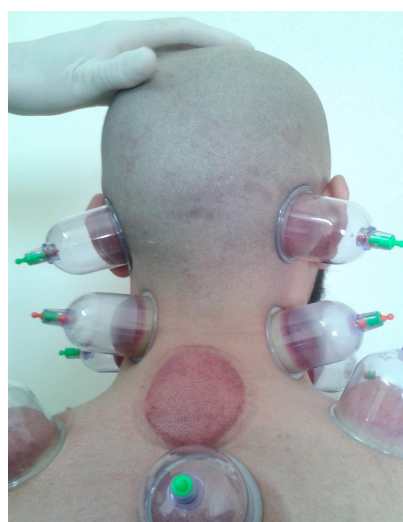


Figure 2. Skin sterilization using alcohol to the skin sites at which the cups will be applied.

In addition, Islamic surgeons practiced tracheostomy (life-saving procedure) during medieval times. Arabic surgeons also improved tracheostomy techniques by changing protocols, tools, and prescriptions for supplemental medications (Golzari, Khan, Ghabili, Hosseinzadeh, Soleimanpour, Azarfarin, et al., 2013). Moreover, Arabic physicians described different treatments for many diseases e.g., atherosclerosis (Choopani, Mosaddegh, Gir, & Emtiazy, 2012). Arabic scientists were pioneering in anatomical discoveries e.g., Ibn al-Nafis discovered the pulmonary circulation (Fujikura, 2011; Masic, 2010b). Ibn al-Nafis was also the first scientist who described the coronary circulation, the anatomy of the cranial nerves, the anatomy of the gall bladder, and some aspects of ophthalmology and therapy through nutrition (Akmal, Zulkifle, & Ansari, 2010; Ashtiyani & Masic, 2010b). Ibn Zuhr (Avenzoar) developed minor surgical techniques, while Abul Kasem Al-Zahrawi (Albucasis) developed methods of dental extraction and dental prosthesis (Ricordel, 2011). There is evidence that anatomical human dissection could have been performed during the time of the Arabic scientist Ibn Bajja's time (Forcada, 2011).

Hepatitis B and C viruses

Due to its long-term consequences, viral hepatitis is a frequent and sometimes fatal health issue, particularly in underdeveloped nations. Cirrhosis of the liver and chronic hepatitis are possible outcomes of hepatitis B and C. Hepatocellular carcinoma is a potential consequences of liver cirrhosis and could worsen a persistent viral infection (But, Lai, & Yuen, 2008). Hepatitis B virus and HCV are regarded as oncogenic viruses due to the incorporation of hepatitis B virus DNA into hepatocyte genomes and the oncogenic potential of HCV. The hepatitis B DNA viruses directly integrate themselves into the hepatocytes' genomes. It is possible for the genomes of the newly created viral agents and infected hepatocytes to combine and acquire carcinogenic qualities. The primary processes via which hepatitis infection can lead to malignant transformation are the suppression of tumor suppressor genes and the activation of cancer genes known as proto-oncogenes (Gurtsevitch, 2008; Traore, Rouamba, Nebie, Sanou, Traore, & Barro, et al., 2012).

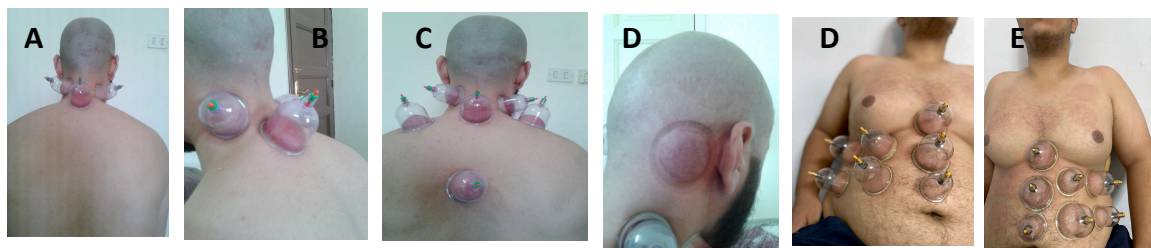


Figure 3. First suction step during Al-hijamah. A-B. Cups are applied at the akhdayin region (on both sides of the neck behind the ears) and at the kahel region (the highest point on the back immediately below the neck). **C.** Cups may also be applied on both sides of the kahel region and in the interscapular region (about 20 centimeters below the kahel region). **D.** Cups marks are evident immediately after removing the sucking cups. **E-F.** For treating viral hepatitis, cups are better applied on the right side of the anterior abdominal wall at the nearest anatomical sites to the liver (above and to the right of the umbilicus including the right subcostal region and parts of nearby anatomical areas). Sucking cups may also be applied at the left upper part of the anterior abdominal wall for better biochemical clearance of the serum and tissues from disease-causing substances e.g., viral particles, inflammatory mediators and immune complexes. **G.** Skin uplifting is created inside the sucking cups due to entry of the skin and contained dermal capillaries inside the sucking cups and dilated pericapillary spaces causing filtration of the fenestrated dermal capillaries immediately beneath the skin barrier.

Diagnosis of viral hepatitis B & C infection

Elevated levels of liver enzymes could support the diagnosis of viral hepatitis. The diagnostic test known as the enzyme-linked immunosorbent assay (ELISA) is capable of identifying HBV surface antigen (HBsAg) and HCV antibodies (HCV Ab). Since PCR finds the presence of hepatitis virus nucleic acids (DNA in hepatitis B and RNA in hepatitis C), ELISA is not as effective as PCR as a diagnostic technique. PCR can be used to make a diagnosis and track the growth in the number of hepatitis virus copies in patients' sera, which is useful for tracking and forecasting treatment progress. HBV early antigen (HBeAg), which arises during the incubation phase and is discovered in the acute stage of the disease, is a marker of active disease and is detectable during the incubation period in some chronic carriers (Ali, Idrees, Ali, Hussain, Ur Rehman, Saleem, et al., 2011; Traore et al., 2012).

Pathogenesis of viral hepatitis

Immediately after entering the blood, HBV or HCV targets hepatocytes and infects them through virus-specific receptors. HBV antigens (e.g., HBsAg) are displayed on the surface of hepatocytes. The immunological reactions to HBV infection include cytotoxic T cell-mediated immune attacks against the viral antigens. This may cause hepatocyte necrosis and inflammation. This may also result in cell-mediated immune damage to hepatocytes. Clinical picture of HBV infections may include arthritis, urticaria and some complications of chronic hepatitis (Guidotti & Chisari, 2006; Kulikov, Mikhaylova, Gemdzhyan, Gaponova, Grumbkova, Tupoleva, et al., 2011; Lim, et al., 2020; Mukhtarov, 1998; Schaff, Lotz, & Schulte-Herman, 1996).

These days, HBV infection is treated with lamivudine, adefovir, and alpha interferon (all nucleoside analogues that block HBV replication by blocking HBV-DNA polymerase). Previously, ribavirin and alpha interferon were used to treat HCV infection. Viral hepatitis treatment is often

costly, time-consuming, and has major adverse effects (Guidotti & Chisari, 2006; Kulikov et al., 2011; Lim et al., 2020; Mukhtarov, 1998; Schaff et al., 1996).

Al-Hijamah is a percutaneous excretory procedure that may clear serum and interstitial fluids from causative pathological substances

The viral particle itself (B or C especially during the stage of viremia), viral antigens (e.g., HBsAg and HBeAg), nucleic acid (DNA in hepatitis B and RNA in hepatitis C), inflammatory cytokines, free radicals, and the ensuing antigen-antibody complexes are among the CPS in viral hepatitis (both HBV and HCV infections) (Guidotti & Chisari, 2006; Kulikov et al., 2011; Lim et al., 2020; Mukhtarov, 1998; Schaff et al., 1996). Al-hijamah is done using a sterile set of new disposable cups (Figure 1). Al-hijamah is recommended for the treatment of viral hepatitis by the Taibah mechanism for Al-hijamah's medical bases. "Through the fenestrated capillaries of the skin dermis (acting as a filter) that resemble the fenestrated capillaries of the renal glomeruli, Al-hijamah (wet cupping therapy of prophetic medicine) acts as a super-kidney that can excrete all CPS collectively and simultaneously outside the human body," according to the Taibah mechanism. This improves immunity by removing CPS from tissues, serum, and intercellular fluids (El Sayed, Mahmoud, & Nabo, 2013a; El Sayed, Mahmoud, & Nabo, 2013b). Local alcohol swabs or povidone-iodine are used to disinfect specific skin areas (Figure 2). Since al-hijamah involves three steps: skin scarification (Figure 4), first skin suction step (Figure 3), and second suction step (Figure 5), it is also known as the triple S therapeutic procedure.

Since capillary blood is filtered at their arterial ends before being absorbed at their venous ends, interstitial fluids are created in this manner (El Sayed et al., 2013a; El Sayed et al., 2013b). Interstitial fluids in hepatitis patients may have the

same CPS as blood plasma since infectious hepatitis agents can be found in a variety of body fluids, including semen and vaginal secretions (Guidotti & Chisari, 2006; Kulikov et al., 2011; Lim et al., 2020; Mukhtarov, 1998; Schaff et al., 1996). The collected fluids are removed through a second suction step puncture in the skin. Based on reports, sucking pressure between -150 and -420 mmHg is used during cupping therapy. The suction pressure, which is a filtration force created by scarifications in the skin barrier, is carried to the skin's capillary region and added to the hydrostatic pressure of the capillaries, which is a weaker filtration force (-13 mmHg at the venous end of

capillaries and -33 mmHg at the arterial end). Both function as excretory forces against the considerably smaller absorption force of the capillary osmotic pressure (+ 20 mmHg) (El Sayed et al., 2013a; El Sayed et al., 2013b). This creates a pressure gradient and traction force over the skin to help drain out the collected and filtered fluids. Suction pressure also creates a pressure gradient around capillaries and boosts filtration at net pressures of -163 to -433 mmHg for the arterial end of capillaries and -143 to -413 mmHg for the venous end. Consequently, homeostasis is restored and blood CPS is decreased (El Sayed et al., 2013a; El Sayed et al., 2013b).

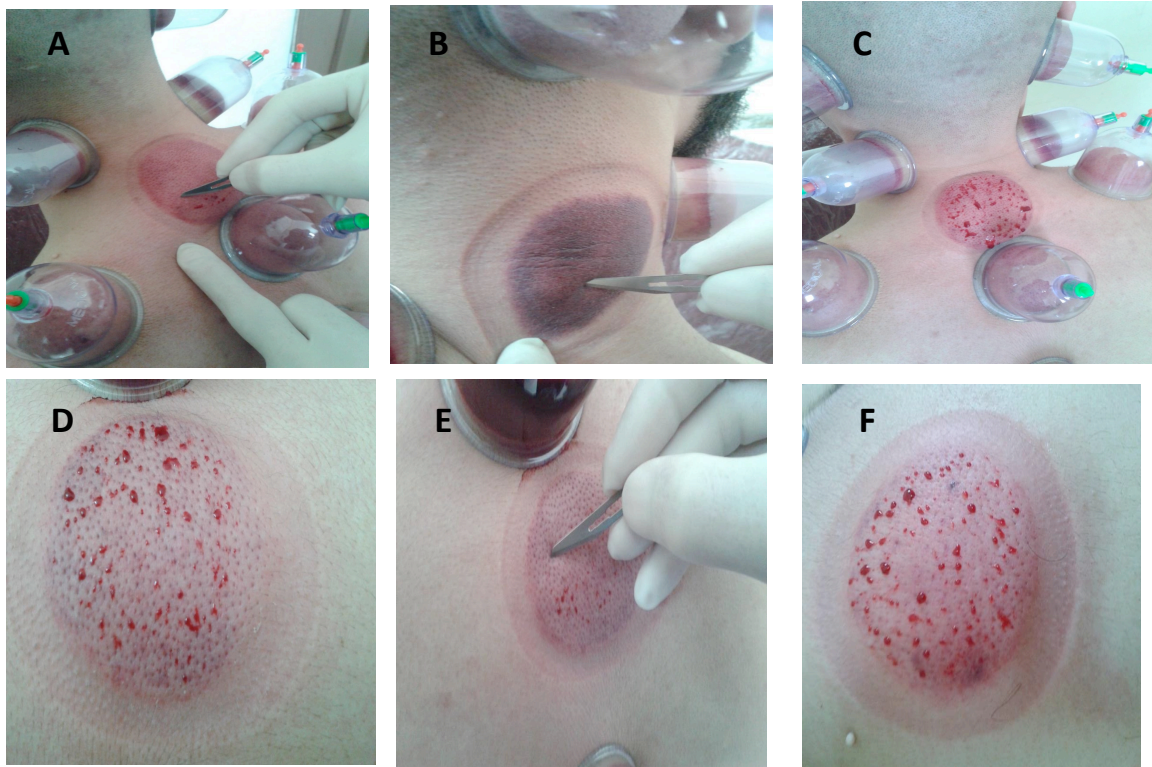


Figure 4. Skin scarification step during Al-hijamah (shartat mihjam according to the evidence-based Taibah theory for better clearance of the serum and tissues). A-B: Using the sharp sterile disposable scalpel as a pen, superficial skin scratches are performed to the skin of the created skin uplifting and are limited to the inside of the cups' margins. C-F: Such skin scratches should be multiple, productive, superficial, in parallel rows, limited to the inside of the cups' margins and vertical.

Al-hijamah is a promising treatment for decreasing viral load in hepatitis

We recently reported that Al-hijamah is an immune potentiating therapy via increasing the count of CD4, and CD8 T lymphocytes and CD4/CD8 ratio (El-Shanshory et al., 2020). That is quite helpful when treating viral hepatitis. Interestingly, Nasrat et al., reported that Al-hijamah dramatically decreased the viral loads of viral hepatitis B and C (Nasrat, Nasrat, & Nasrat, 2016; Nasrat, Nasrat, & Nasrat, 2010). Taking viral hepatitis as an example, CPS includes viral particles, viral antigens, immune complexes, cytokines, inflammatory mediators, free radicals (e.g., malondialdehyde) and others (But et al., 2008; El Sayed et al., 2013a; Guidotti & Chisari, 2006; Gurtsevitch, 2008; Huber, Emerich, & Braeunig, 2011; Lim et al., 2020; El Sayed et al., 2013b). Pores of fenestrated skin capillaries range from 6-12 nm while the fenestrae sizes (covered with diaphragms) range between 60-80 nm (Dehdashtian, Stringer, Warren, Mu, Amirlak, & Shahabi, 2018; Takada & Hattori, 1972). Al-hijamah is done in a completely aseptic atmosphere with proper sterilization and includes

three major steps: suction, scarifications and suction again i.e., triple S technique.

There is no other treatment modality that can excrete hepatitis viruses up till now. In hepatitis due to HBV infection, the complete infectious virion is a "Dane particle" that is a 42 nm spherical particle (İnan & Tabak, 2015; Pronier, Bomo, Besombes, Genet, Laperche, Gripon, et al., 2022); while in HCV infection, the virus is a 60 nm spherical enveloped single-stranded RNA virus (Catanese, Uryu, Kopp, Edwards, Andrus, Rice, et al., 2013; Chase, 2022). Based on that, the size of viral particles may be lower or around the sizes of capillary fenestrations and sizes of induced scarifications in subepidermal capillaries of skin and skin barrier during Al-hijamah (1-2 mm). Induced scarifications during Al-hijamah (shartat mihjam in Arabic) may facilitate transcapillary percutaneous filtration then excretion of viral particles and another disease CPS when applying suction pressure (during the second suction step). More research is needed to confirm this possibility (El Sayed et al., 2013a; El Sayed et al., 2013b)

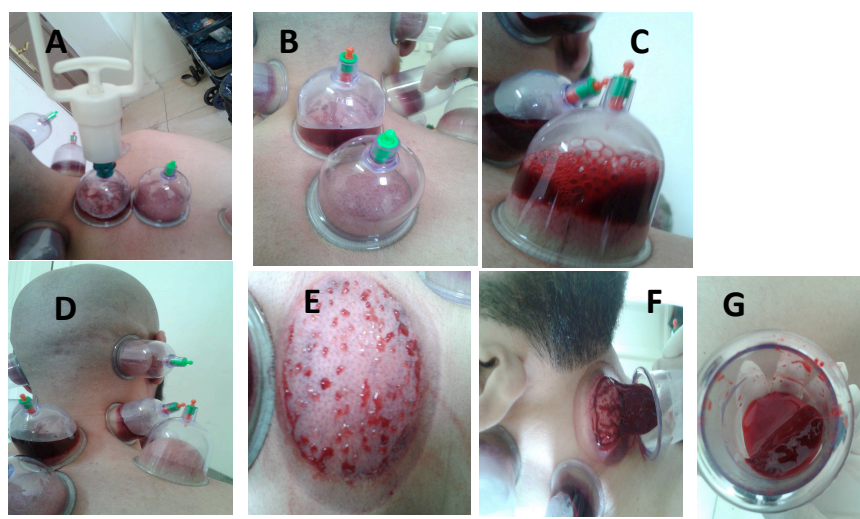


Figure 5. Second suction step during Al-hijamah. A-B. The bloody excretion starts to collect immediately inside the sucking cups upon their immediate application. C-D. The sucking cups are removed, evacuated and then reapplied again a few times until the bloody excretion stops to accumulate. E. At the end of the collection of the bloody excretion, a serum-stained bloody excretion gets out denoting clearance. F-G: The bloody excretion starts to clot inside the sucking cups. That should be evacuated, cleaned and reapplied again till the bloody excretion stops to accumulate.

There is a reported relationship between the decrease in serum level of interferon (IFN)- γ and interleukin (IL)-2 and chronicity of HCV infection mostly due to viral evasion of immune response (Al-Saedy, El-Hazemy, Hassan, Badawy, & Bahr, 2007; Cox, Mosbrugger, Lauer, Pardoll, Thomas, & Ray, 2005; Semmo, Day, Ward, Lucas, Harcourt, Loughry, et al., 2005). The possibility of using Al-hijamah as a novel treatment for viral hepatitis C was reported in an Egyptian-Saudi study where patients underwent four sessions of Al-hijamah. Patients tolerated treatment with no side effects. Al-hijamah reduced the viral load by more than 43%. By the end of the last session, there was a significant decrease in the number of HCV copies in treated patients, where HCV RNA went from $(3.52 \pm 0.53 \times 10^5 \text{ IU/ml})$ to $(2 \pm 0.38 \times 10^5 \text{ IU/ml})$. There was a seroconversion from positive PCR to negative PCR in 10% of 20 cases. Interestingly, immunological parameters related to the enhancement of cell-mediated antiviral immunity (e.g., IFN- γ , tumor necrosis factor (TNF)- α , IL-2 and IL-1 β) were elevated giving the impression that Al-hijamah enhances natural immunity (Al-Saedy et al., 2007), in agreement with Taibah theory (El Sayed et al., 2013a; El Sayed et al., 2013b). Interestingly, IFN- γ , TNF- α , IL-2 and IL-1 β are secreted by the activated T helper-1 lymphocytes for the purpose of activating antiviral cell-mediated immunity (Ferrari, Valli, Galati, Penna, Scaccaglia, Giuberti, et al., 1994; Romagnani, 1994). IL-1 β is also secreted from macrophages/monocytes and represents the first line of defense against viral infection (El Sayed et al., 2014). There was a significant increase in the number of leucocytes with Al-hijamah as evidence of the immunological benefit of Al-hijamah (in agreement with the Taibah mechanism) (El Sayed et al., 2013a; El Sayed et al., 2013b).

On the contrary, IL-4 and IL-10 secreted by T helper-2 may suppress antiviral cell-mediated immunity allowing for prolonged disease status. It is the imbalance between immunostimulatory and inhibitory cytokines that can prolong inflammation and lead to necrosis, fibrosis and chronic liver

disease (Brown & Neuman, 2001). Interestingly, the Egyptian-Saudi research group reported that serum levels of inhibitory cytokines (e.g., IL-10) decreased significantly and progressively with each session of Al-hijamah. Starting serum level of IL-10 (measured before the first session of Al-hijamah) was 4.1 pg/ml and dropped to 2.1 pg/ml (measured before a fourth session of Al-hijamah) i.e., Al-hijamah induced a significant decrease in serum IL-10 by more than 51%. There was no significant change in kidney function tests or liver function tests related to sessions of Al-hijamah (Al-Saedy et al., 2007). As for the free radical malondialdehyde (a marker of oxidative stress due to viral hepatitis infection), its levels decreased significantly in venous blood with Al-hijamah. Malondialdehyde was $16 \pm 2.5 \mu\text{M}$ before the first session and decreased significantly to $7.3 \pm 0.29 \mu\text{M}$ in venous blood before the fourth session (i.e., decreased by about 54%) (Al-Saedy et al., 2007).

Other therapeutic benefits of Al-hijamah when treating viral hepatitis

Nitric oxide (NO) was reported to be endogenously produced due to skin punctures (Tsuchiya, Sato, Inoue, & Asada, 2007), injuries and wounds (Schäffer, Tantry, van Wesep, & Barbul, 1997) as that occurring during skin scarifications of cupping therapy (El Sayed et al., 2013a; El Sayed et al., 2013b). NO restricts the pathogen's growth after cutaneous infection (Stenger, Donhauser, Thüring, Röllinghoff, & Bogdan, 1996). NO blocks the development of edema and the buildup of leukocytes, counteracting the effects of several inflammatory mediators (Teixeira, Williams, & Hellewell, 1993). NO functions as an antimicrobial agent, immunoregulator, neurotransmitter, vasodilator, anti-proliferative and anti-neoplastic agent (Wang, Ghahary, Shen, Scott, & Tredget, 1996). NO affects how fibroblasts, keratinocytes, and macrophages behave when healing wounds (Frank, Kämpfer, Wetzler, & Pfeilschifter, 2002). Crucially, NO promotes the development of VEGF, or vascular endothelial growth factor (Frank, Stallmeyer,

Kämpfer, Kolb, & Pfeilschifter, 1999), which was reported to increase the fenestrations sizes in capillaries (Roberts & Palade, 1995) that might make it easier for CPS and other viral particles to be expelled during Al-hijamah. VEGF-induced increased vascular permeability is mediated locally by NO and metabolites of arachidonic acid synthesis (Fujii, Irie, Ohba, Ogawa, Yoshioka, Yamakawa, et al., 1997).

Percutaneous excretion of many different types of CPS were reported previously when treating rheumatoid arthritis (Ahmed, Madbouly, Maklad, & Abu-Shady, 2005). Percutaneous excretion of hepatitis B or C viruses (average size ranges from 42-60 nm), viral antigens and immune complexes from blood may be possible in light of the relatively small size of those CPS compared to capillary pores (6-12 nm), fenestrae (60-100 nm in size) and induced skin scarifications (shartat mihjam in Arabic that may be 1-2 mm in size) taking into account the strong suction force when cups are applied (-150 to -420 mmHg) (El Sayed et al., 2013a; Huber et al., 2011; El Sayed et al., 2013b). Excreting viral particles may decrease viral load and this will facilitate the therapeutic role of antiviral drugs. Percutaneous excretion of hepatitis B or C viruses, viral antigens and immune complexes from blood may occur in two phases: Phase I through possible filtration of viral CPS from blood through capillary pores and fenestrae (under pressure effect of first suction) and Phase II through excretion of viruses and other CPS through skin scarifications under pressure suction effect of the second suction. Hepatitis patients may benefit also from other reported health-based benefits of Al-hijamah e.g., increased natural immunity (increased number of natural killer cells (Ahmed et al., 2005; El-Shanshory et al., 2020), immune-stimulating cytokines (Abbasi, Biglarkhani, Meyari, Amini, Fiaschi, & Najafi, 2022); Abbasi & Najafi, 2021; Obeid et al., 2022) and pharmacological potentiation with conventional treatment for hepatitis viruses. Al-hijamah decreases viral copies and other CPS (Al-Saedy et al., 2007) and this is expected to allow

pharmacological treatments to do easier and better. However, the Egyptian-Saudi research group did not refer to the most important therapeutic benefit of Al-hijamah which is its clearance effect of both blood and interstitial spaces from CPS as previously reported (El Sayed et al., 2013a; El Sayed et al., 2013b). Excreting pathological substances in a pressure-dependent and size-dependent manner is expected to excrete CPS partially or totally, which will facilitate the natural immunity and therapeutic roles exerted by pharmacological treatments. According to Taibah mechanism (El Sayed et al., 2013a; El Sayed et al., 2013b), therapeutic benefits of Al-hijamah can be applied to hepatitis patients and include enhancement of natural antiviral immunity, blood clearing benefit of viral CPS, pharmacological potentiation of antiviral treatments, enhancing capillary circulation, removing vascular congestion and others (El Sayed et al., 2013a; El Sayed et al., 2013b). The authors were successful when they evaluated the levels of the above-mentioned substances in the venous blood versus their levels in the cupped blood. However, it would have been better if they evaluated the differences in venous blood samples immediately before and after performing each session of Al-hijamah, which will give an evaluation and idea about the excretory benefits through Al-hijamah by investigating the differences between serum levels of the above-mentioned substances. It would have been better if the authors evaluated the effect of the combination of Al-hijamah plus conventional pharmacological treatments versus pharmacological treatment only and also versus treatment using Al-hijamah as a sole treatment. Decreasing the load of viral particles by about 43% after Al-hijamah (together with the reported enhancement of immunity induced by Al-hijamah) may allow human immune system to get rid of the remaining existing hepatitis viruses. That will be facilitated by drug treatment. The triad (Al-hijamah + pharmacological treatment + enhanced immunity after Al-hijamah) is expected to cure or at least improve the outcome of hepatitis treatment

(Loukas et al., 2010; Rodini, 2011). Therapeutic benefits of Al-hijamah fully agree with the teachings of prophet Mohammad peace be upon him who said: The most ideal among what you use in therapy is Al-hijamah (El Sayed et al., 2013a; El Sayed et al., 2013b) and “If there is a benefit in any of your treatment modalities, benefit will be in shartat mihjam (superficial blade puncture in Al-hijamah), a gulp of honey and cauterizing, but I do not like cauterization” (El Sayed et al., 2013a; El Sayed et al., 2013b).

Therapeutic immunological benefits of Al-hijamah were confirmed by Chinese cupping therapy

According to Zhang et al., Chinese cupping therapy (equivalent to a partial form of Al-hijamah) significantly increased immune-stimulating cytokines and significantly decreased immune-inhibiting cytokines in asthmatic patients. Wet cupping therapy (Al-hijamah) resulted in increased levels of CD4+ (T-helper cells), CD4+/CD8+ (elevated T-helper to T-cytotoxic ratio), IL-2, IFN- γ , C3, C4, IgA, IgG, and IgM. Alongside this, there was a marked drop in immune-inhibiting cytokines and antibodies such as immunoglobulin E, IL-4, IL-10, and CD8+ (Zhang, Liang, & Zhang, 2006). The authors concluded that the improvements were better in the treated group than in the control group (Zhang et al., 2006), which is in agreement with the above-mentioned data presented by the Egyptian-Saudi research group.

Conclusion

Al-hijamah is a potentially effective treatment for boosting immunity in humans, reducing free radicals and their harmful effects, and purging blood of pathogens linked to the etiology of viral hepatitis. Other medicines from prophetic medicine, such as nigella sativa, costus, and Ajwa date fruits, strengthen the antioxidant capacity that Al-hijamah induces and counteract the effects of oxidative stress on liver illnesses.

Acknowledgments

The study's beneficial setting was made possible by Taibah University in Saudi Arabia, for which the author is appreciative.

Conflict of interest

The author has disclosed that they have no competing interests.

Financial and non-financial competing interests

The author affirms that they have no conflicting interests with any other partner, either financially or non-financially. No monetary gains are made. The author wholeheartedly endorses the article.

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