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REVIEW ARTICLE

Anatomical Features of the Interscapular Area Where Wet Cupping Therapy Is Done and Its Possible Relation to Acupuncture Meridians

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Abstract
Although wet cupping has been a treatment for centuries, its mechanism of action is not well understood. Because the anatomical features of the wet-cupping area might play a role in its mechanism, we focus on the features of the interscapular area in which a common type of wet-cupping therapy (WCT), called *Hijamat-e-Aam* in Iranian medicine, is usually applied and discuss the possible relation of those features to the acupuncture meridians. We gathered and analyzed data from reliable textbooks on modern medicine with a focus on the anatomical features of the interscapular area, topics related to WTC in Iranian medicine, and acupuncture sources obtained by searching PubMed, Google-Scholar, and Science Direct. The interscapular area used for WCT was found to have special features: brown adipose tissue, immediate proximity to sympathetic ganglia, passage of the thoracic duct, two important acupuncture meridians, and proximity to the main vessel divisions carrying blood from the heart and the brain. These features indicate that the interscapular application of WCT not only discharges waste materials through a shifting

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of blood to the site after application of a traction force but also invigorates the body's metabolism, increases immunity, and regulates blood biochemistry, which are desired therapeutic effects of WCT.

1. Introduction

As the present study is an attempt to shed light on the scientific mechanism of a particular type of wet cupping, called *Aam* or *Kahel* (in Arabic-speaking countries) or *Kahilya* (in India) [1], we should briefly introduce the primary differences between two different types of blood drainage for therapeutic purposes in traditional medicine, namely, wet cupping and phlebotomy. Wet-cupping therapy (WCT) dates back to nearly 3500 BC, and several historical documents are available on its first use among ancient cultures in many parts of Europe and in Eastern countries including Iran [2,3].

Wet cupping is called *Hijamat* in Iran, which comes from the Arabic *Hajm* or *Hajam* meaning expansion, sucking, and bloodletting [3,4]. WCT is a procedure for bloodletting from the capillary networks after sucking and scarification steps [2]. In this procedure, a cup is mostly attached to the surface of the skin by using a negative pressure or suction-like force. A few minutes later, the uplifted cup is removed, and superficial incisions are made using a scalpel. The cup is then replaced, and the procedure is repeated three to five times until some blood and interstitial fluid are drained [2,3,5].

An alternative method for blood drainage for medical purposes is called phlebotomy or venesection (or *Fasd* in Arabic). Unlike wet cupping in which the blood is drained from the capillary network, in this method, the blood vessels, commonly hand veins, are cut with a scalpel, and the blood is directly drained [2]. Phlebotomy is often mistakenly believed to be the same as wet cupping or *Hijamat*, but the two differ in their vessel sources.

In spite of vast traditional and modern usage of WCT, not enough explanation has yet been provided for its mechanism of action. According to *Avicenna*, wet cupping (*Hijamat*, in his own term) acts through two mechanisms: first, blood purification or clearance, especially for the skin and its adjacent organs, and second, thin blood drainage [2,6,7]. These mechanisms have not yet been translated into the language of modern medicine and are tangible only for experts in the concepts of humoral medicine. However, several theories have been proposed to date [8]. Among these, *Taibah* theory by El Sayed et al [8] has a more scientific basis than the others and can explain the "molecular events" of WCT based on modern medical knowledge.

According to *Taibah* theory, WCT is a minor surgical excretory procedure that mimics the secretory function of an artificial kidney. Unlike the normal kidney that filters only hydrophilic materials through the renal glomeruli at normal filtration pressure, WCT can filter both hydrophobic and hydrophilic substances under a higher filtration pressure. Due to the viscoelastic properties of the skin, this high pressure leads to an increase in blood volume and a reduction of pressure in the area according to the Boyle—Marriott law. This can enhance the capillary's filtration rate and can lead to the accumulation of filtered, as well as interstitial, fluid in the area. Filtered fluid comprises disease-causing and disease-related substances that are drained through scratches without returning to the venous end of the capillary network. Furthermore, scalpel scratches on the skin stimulate endogenous opioid release and inflammatory cell migration to the cupping site and improve innate and acquired immunity. This sequence of events will be completed by the third sucking step.

According to El Sayed et al's [8] theory, WCT decreases the interstitial fluid pressure, capillary venous return, venous pressure, and peripheral vascular resistance. However, it improves blood flow and relieves congestion and swelling by disposing of toxins and waste materials. Prostaglandins and inflammatory mediators are also eliminated. These changes restore neuroendocrine balance and hemostasis, modulate angiogenesis, relieve muscle spasms, and help improve oxygen supply and tissue perfusion [8].

As mentioned above, *Taibah* theory concentrates only on the "molecular events" that occur in any type of wet cupping, which can be applied to different parts of the body for different purposes [9]. However, one type of WCT named *Aam*, applied in the interscapular region, seems to provide additional unique advantages to the entire body due to the distinct anatomical characteristics of the region. That is why it is called "*Aam*," which means "general" in Arabic, while other types of wet cupping affect only the particular region in which the procedure is applied. In Arabic, these types are called "*Khass*," meaning "specific."

The outstanding anatomical features of *Hijamat-e-Aam*, in addition to the molecular mechanisms proposed in *Taibah* theory, may add to the value of wet cupping in the treatment of diseases. Recognizing these features about *Hijamat-e-Aam* can fill more convincing information into the puzzle of the mechanism of action of this type of WCT. Therefore, we hypothesize and discuss in this article the idea that the usual whole-body effects of *Hijamat-e-Aam* occur due to the adjacent anatomical organs and histological properties of the skin at the site of the therapy, i.e., the interscapular area, which is a perfect site for this type of WCT.

2. Materials and methods

This study was carried out based on the basics of Iranian Traditional Medicine through scanning reliable sources such as The Canon of Medicine by Avicenna (10th century and 11th century), The Summary of Wisdom (Kholāsa Al-Hekma) by Mohammad Hossein AghiliKhorasani (18th century), and *Moffarah Al-Gholoub* by Muhammad AkbarArzani (late 17th century and early 18th century). The keywords included

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