

## The perspectives of Traditional Persian Medicine on the Diagnosis and Treatment of Migraine

Sajad Azimi Mehrabadi<sup>1</sup>, Mohsen Yavari<sup>1</sup>, Alireza Asgari Golzardi<sup>1</sup>, Mohsen Ebrahimi-Monfared, M.D.<sup>2</sup>,  
Mostafa Alizadeh, M.D.<sup>3</sup>, Saeed Changizi-Ashtiyani, Ph.D.<sup>4</sup>

1- Student Research Committee, Arak University of Medical Sciences, Arak, Iran

2- Assistant Professor, Department of Neurology, Arak University of Medical Sciences, Arak, Iran

3- Ph.D. Candidate, Student Research Committee, Arak University of Medical Sciences, Arak, Iran

4- Professor, Traditional and Complementary Medicine Research Center (TCMRC), Arak University of Medical Sciences, Arak,

Iran (Corresponding author; dr.ashtiyani@arakmu.ac.ir)

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### Abstract

**Background:** Headache is a common clinical symptom which goes far back in human history. This study is a quick review on headache concerning its diagnosis and treatment based on writings of Rhazes and Avicenna as the most distinguished and prominent scholars in Iranian medical history.

**Methods:** In this review the reliable literature on related traditional medicine was investigated. The sources include: Al-Hawi Fi Al-Tibb (Liber the Continens), Mansuri fi al-tabb, the treasure of Khwarazm shah, The Canon of Medicine, Kamil al-Sanate al-Tebie as well as related articles retrieved from different databases.

These databases included Scopus, Medline, PubMed, science Direct, SID, and Google Scholar. In addition, other original texts and sources of Neurology were perused and relevant information was abstracted. In this regard, the diseases of the head, Suda (headache), and the subset of the disease, the term of Shaqeeqa (migraine), were searched in original books of Persian medicine.

**Results:** Diagnosis of temperament, diet modification, use of medicinal herbs and treatments such as massage, bloodletting, dry cupping and purgation of the body from various additional materials were considered as important components of the treatment protocol.

**Conclusion:** The differential diagnosis of migraine from other types of headaches, as well as providing a unique and specific theory for the cause of migraine in the works of Rhazes and Avicenna is surprising. Also, the use of multiple therapies in the treatment of migraine and the selection of herbs with sedative, anti-inflammatory and dermal compositions make it necessary to reconsider and study the experiences of traditional medicine practitioners again.

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### Introduction

There are few people who have never experienced a headache in their lives. Headache is a very common disorder with a prevalence of 96% in the general population. Migraine

is one of the common types of headaches that afflicts 12% of the general population and is more common in women than men. This type of headache is ranked seventh among the disabling diseases and eighth in terms of severity (1). Migraine

is a benign and recurrent headache that is usually accompanied by nausea, vomiting, sensitivity to sound and light and tiredness, occurring in one half of the head (2). The international headache society (IHS) defines it as a type of recurrent headache that may be with aura or without aura (3).

So far, several therapies, including pharmacological and non-pharmacological treatments, have been proposed to prevent and treat migraine attacks. The prophylactic treatments include beta blockers, antidepressants and anticonvulsants (4). Despite the advances in medical science, there has not yet been a definitive and reliable treatment for preventing the onset and recurrence of migraines (5). That is why a wide range of complementary and alternative drugs are used to treat them.

Many renowned Iranian physicians have devoted an important part of their writing to headaches and their treatment. Undoubtedly, the valuable experiences of the doctors who have succeeded in controlling and reducing headache-related illnesses throughout the ages can be interesting for readers and practitioners. The present study is a review of symptoms, diagnosis and treatment of migraines in Persian medicine.

## Methods

In this review, reliable literature on traditional medicine was investigated. The sources include: *Al-Hawi Fi Al-Tibb* (Liber the Continens), *al-Mansuri fi al-tibb*, the treasure of Khwarazm shah, *The Canon of Medicine*, *Kamel al-Sanaat al-Tibbia*, as well as related articles retrieved from different databases. In these books, the diseases of the head, Suda (headache), and the subset of the disease, the term of Shaqeeqa (migraine), were searched in original books of

Persian medicine. Also, searches were conducted in Persian and English databases including SID, Magiran, Irandoc, PubMed, Science Direct, Scopus, Medline, and the Google search engine. The main focus of this article is on the *Kitab Al-Hawi Fi Al-Tibb*, *Kamil al-Sanate al-Tebie* and the *Canon of medicine*. Other books were also reviewed as needed.

## Results

### The history of migraine

Headache has been one of the human problems which throughout history, various methods such as magic, spell, prayer, and medical science have been used to treat it. (6). The first descriptions of headache, migraine and other neurological disorders appeared in Babylonian and Egyptian writings (7). Probably the first steps to treat headaches were taken about 9,000 years ago, during the Mesopotamian civilization. They attributed the headache to the gods and bad spirits in order to cure sick people. For this reason they pierced the skull to remove bad spirits from the patient's head (5, 7).

According to the texts, Hippocrates (370-460 B.C.) was the first who collected a set of clinical signs of migraine and identified it as a distinct disease (8, 9) and Galen (131-201 A.D.) distinguished between migraine and other common headaches, and chose the Hemicranias as the name of the disease to distinguish it as a type of headache that engaged one side of the head. He believed that this pain occurs in the weakest parts of the brain. He contended that the pain originated from the middle of brain membrane (8-10).

According to Ali Ibn Abbas Ahwazi, Galen believed that the severe headache occurs only in one part of the head, and sometimes in the membranes, sometimes in outer part of the skull, sometimes in the veins of the head, and sometimes in

the skull (11). He considered the cause of this type of headache inside the cranial, meninges, or temporal muscle. He pointed out that if the pain is outside the cranial, the severity of the pain is high and in this case the substance has reached the site of pain by the vein or the external artery (12).

### Etiology of migraine disease based on the ideas of prominent Persian medicine

Based on humor theory, the four humors are black bile, yellow bile, phlegm, and blood which constitute the basic structure of each individual. The amount and proportion of the combination of these humors in the body and organs of each person create one of the four natures or temperaments: warm, cold, dry and wet. This theory forms the basis of the Persian traditional medicine (13).

Hakim Muhammad Ibn Zakaria Razi (865-865 A.D.), (Rhazes) in his book, *Liber Continens*, regarding the cause of headache wrote: "*It happens as a result of congealed phlegm in the membrane covering the brain, or the accumulation of phlegm in the membrane that covers the underside of the scalp, which is itself the result of either the accumulation of bad humor (phlegm) or wind, with a hot or cold nature*"(14).

Avicenna (980—1037 A.D.), the great Iranian scientist in the *Cannon of medicine* mentions migraine as *shaqeeqa* (lateral headache): "*Sometimes half of the head is painful, if it is persistent, it is called shaqeeqa. It is a pain in one side of the head which excites the brain*" (12). Avicenna divides the headache into three types: "1) a simple headache 2) a headache that occurs as a result of damage to the brain and 3) *shaqeeqa*". According to Zargarani et al, Avicenna is the first to provide a basic theory for migraine pathophysiology:

*"Migraines are caused by increased brain excitability, which increase the sensitivity of the brain to the noise and light"* (15).

In the *Cannon of medicine*, Avicenna divides the causes of headache into three categories: Changes in temperament, or separation in adjacent cases, or the combination of both causes the headache (12). He also categorized the headaches according to the location of the pain, and says that *shaqeeqa* is one of the headaches that is stable in the mid-head and becomes accustomed (8,12).

Avicenna divides the *shaqeeqa* headaches into two main types: hot and cold headaches. If the type of headache is cold, by warming up, the pain will be alleviated, and if it is hot, it will feel warm at the touch. The pulse is clear in the temporal and recovery is achieved with the administration of cold-nature drugs. If the headache is chronic and persistent, it is of course a chronic cold type and needs to be lysed and sometimes to be kept warm (8,12).

Ali ibn Abbas Ahwazi (949-999 A.D.), known as Haly Abbas, in the *Kamil al-Sanate al-Tebie* Book writes about the symptoms and causes of *shaqeeqa*: "*However, the painful and severe shaqeeqa develops in half of the head, and the symptom are within the skull and only in one side of it pain is felt and such pain occurs in certain periods but the cause of it is the bad humor with warm or cold quality that fills the membranes of the brain, or from the vapor that goes up from the stomach, and the patient feels pain in the skull and only in one half and most of this complications occur in certain periods*"(11).

In this book, he also mentions other factors involved in severe headache such as vomiting, nose bleeding, periodic bleeding of women, hemorrhoids, diarrhea, postpartum hemorrhage, anemia, that causes dryness (dehydration) or

sexual intercourse, and in some cases sadness, as well as brain tiredness, agitation and the abundance of perception (11).

### Migraine and its relation to nutrition and lifestyle

#### The general cure for all types of headaches according to Avicenna

For headaches, Avicenna recommends: especially the type of hot, rest and relaxation, less talking, reducing physical and emotional activities such as intercourse, and avoiding thought and anger. He also recommends eating and drinking less, sleeping more and avoiding drinking large quantities of wine in order to prevent headaches. However, he finds that extreme hunger exacerbates both hot and chronic headaches. He does not allow the consumption of sour foods during the headache, except for those with a headache leading to digestive system and from bile reflux to the stomach (12).

#### Medicines for treating migraines in Persian medicine

By referring to the original texts of Persian medicine, we found a long list of effective herbal medicinal plants for which a summary is provided in Table 1.

#### How to treat migraine in Rhazes' works?

Rhazes writes in al-Hawi: "*Sandrous aroma are beneficial for the treatment of the pain in one side of the head. Also, the use of a dressing of the ashes of sandrous with vinegar will be useful for the treatment of the severe headache and the pain in one side of the head.*"

Besides, as another tested remedy: "*scrub piper cubeba*" and mix it with *Rose damascene* and apply it to the head. My experience is that an indispensable tool for treating the pain is to apply *Indian piper cubeba* on the head. In addition, it will

*be efficient if three drops of it is mixed with the extract of beet root (Beta vulgaris) and sniffed into the nose*" (14).

#### A tablet useful for treating migraine

"*Make a mixture of 12.75g of Ruta graveolens L., 17g of Euphorbia, 12.75g of the gum of Ferula assa-foetida L), 4.25 g of the gum of Commiphora myrrha, and 4.25g of Pranga ferulaceae in the form of a pill and then dissolve the pill in vinegar and apply it on the head*" (14). He also says: "*I made an ointment from Euphorbia and used it. It was so useful that I no longer needed any other drugs*". "*Drop Euphorbia dissolved in nardine oil (an oil that is obtained from the combination of nardines, Hyacinthus with Rosacea and Balsana etc.) into the nostril of the healthy side of the head*"

#### How to treat migraine according to Avicenna?

"*Wash the patient with juice of Cucumis sativus and keep him exposed to the aroma of Cucumis sativus in the bathroom, then drop Pistacia vera oil into his nose, which will lower his pain under the neck and if nose is dried because of it, pour some drops of pumpkin oil into it*".

Avicenna divides the treatment of shaghighah into two categories:

1. A preventive program that will take place before the onset of pain and at the rest of the patient.
2. A plan of treatment when the pain is present.

If the headache is recurrent, the body should be cleansed before its onset as it changes the temperament of the patient. To do so, the patient's temperament should be taken into consideration before starting the treatment: "*If the material is warm, you should cool down both halves of the head by applying opiate, the Mandragora officinarum, the Steppe-*

*Alon-aloman-alen*, the *Cannabis Sativa L* and camphor (*Cinnamomum camphora L*), as well as by cooling down the location of the pain by cold-acting medicines. Applying saffron (*Crocus sativus L.*) to the patient's forehead is also good. Dissolve a small amount of *Laurus nobilis*, a small amount of *Ficus carica L.*, and half amount of mustard (*Brassica nigra L*) in water, and apply it as ointment. It is useful. The balm extracted from Spanish fly (*cantharis*, from the family of *Lytta Vesicatorial* or an ointment made of *Ficus carica L*), when applied to the forehead will be better than any other ointments as it makes the pain location blister and bleed which functions as cautery. (12).

If the material is very cold, you should apply *Euphorbia helioscopia*, mustard (*Brassica nigra L*) and the *Anacyclus pyrethrum L.* to the forehead and put bandage on it. If the headache is chronic and highly persistent, it is cold and needs to be lysed and should be kept warm. Once the body is freed from waste materials and you want to use the liquid drugs, first massage the muscles on the painful side smoothly by using fingers and a rough cloth and then use the medicine. "If the pain is very intense and you need to use opiate, apply *Paper somniferum L.* and *Astragalus fasciculifolius* to the arteries close to the pain and gently rub. Also, put a piece of wood or lead on the forehead and fasten it in order to stop the pulsation which increases the pain". "The best ointment is *Brassica nigra L.* If the pain persists, mix *Ficus carica L.*, *Capparis spinosa L.*, *Drimia maritima L.* and *Euphorbia*, and dissolve in *Ocimum basilicum* to make a potion and apply it to the forehead which is the best remedy. "In the earlier stages of the pain it is useful for the patient to go to the bathroom and inhale hot water vapour and then he should sneeze with

*pistachio oil (Pistacia vera)*, which immediately lowers the pain to the shoulders".

Avicenna says: "The bloodletting from the temporal and forehead vessels is beneficial in the treatment of shaqeeqa" (12).

#### How to treat migraine in Kharazmshahi Treasure (Jorjani)

For people with obvious high sanguinary temper, bloodletting from forehead and nose is useful. For those with yellow bile in stomach, *Aloe vera* in the juice of *Cicorium intybus L.* is beneficial and *Ayraj Fighera* (a mixture of the powders of *Rosa domestica L.*, *Cinnamomum verum*, *Zingiber officinalis L.* and *Aloe vera.*) is profitable in all types of shaqeeqa. If shaqeeqa is recurrent, the patient should vomit beforehand and remove the cause of it from the body. Also, for each cause of the pain there should be an appropriate ointment. Applying saffron in a light layer is useful. The eye of the person, whose migraine is recurrent, will weaken. Therefore, the cause should be removed.

"In the migraine that is caused by the accumulation of a hot blood substance, blood collection and bleeding will probably be effective and beneficial depending on the case. However, if the bloodletting from the forearm is not sufficient, then the bloodletting should be done from the nose or forehead. "He also believed that: "if the material is warm, *Ipomoea Tricolor L.*, *Viola odorata L.*, *Althaea officinalis L.*, lettuce (*Lactuca sativa L*) and *rosa* should be boiled together and the resulted extract should be applied to the painful side of the head. Also, the oil of lettuce seed (*Lactuca sativa L*) and the skin and roots of *Malus domestica L* and opium (*Paper somniferum L*), should be applied in a slight layer to the

forehead. If it is cold, apply a thin layer of *Matricaria chamomilla L*, *Anethum graveolens*, *Artemisia L*, *Thymus vulgaris L*, and Henna mixed in salt water and safisia (*Ruta graveolens* gum) and the root skin of *Capparis spinosa L* and *Drimia maritima L*. Stearn and Euphorbia to the forehead. When the pain is recurring, apply opium on pulmonary artery to prevent it from pulsation which is the cause of pain." *"Of course, it is not wise to use narcotics frequently, and if no treatment is effective in pain relief, the vessels behind ears should be cut to let some blood go, then it should be burnt to stop bleeding"*(16).

As mentioned above, in traditional medicine, the most commonly used treatments involved skin and topical balms. In addition, other therapies such as enema, bloodletting and inhaled drugs were also used with less oral medications. Today, the strategy for designing migraine drugs is based on migraine condition (which may cause vomiting), and due to their fast effects, inhaled and nasal drugs are preferable (5).

### Some remedies for Migraine

One of the strategies of traditional Iranian medicine in the treatment of a general headache caused by the material is dragging the material from head to bottom. *"If you know that the headache is due to the presence of material, you must try to push the material down. In this regard, you should apply enema in such a way that it can remove the material from around the liver and the stomach. Among other things, massaging both legs can take the headache down as the person who has a headache goes to sleep when his legs are massaged. You need to continue massaging until the headache is removed"*. Avicenna wrote: *"In the treatment of headache, the bloodletting from the forehead, cupping down, massaging*

*hands and feet, placing hands and feet in warm water, a little walking, avoiding bloating and bad digestive foods are the best remedies and the resultant is the removal of the headache"*(12).

From his experience, he adds: *"Maybe if we pour warm water on the patient's hands and feet continuously, the patient feels that the pain goes down from head to toe and disappears"* (12).

### Etiology of migraine disease based on the ideas of modern medicine

In modern medicine, migraine pathophysiology is not clearly defined yet (17). However, three theories in recent decades have been presented for the cause of migraine:

1. Neuronal theory: According to this theory, migraines are caused by the abnormal functioning of neurons and the release of neurotransmitters in brain neurons.

2. Vascular Theory: Intra cerebral artery stenosis and the expansion of extracranial vessels are known as the mechanism for developing migraines. The effectiveness of vasoconstrictive drugs also supports this theory (18, 19).

3. Neurogenic Theory: This theory attempts to adapt vascular changes to a neurological disorder that may occur in a migraine headache, and it suggests migraine pain to be caused by meningeal inflammation and dilation (18).

The latter indicates that a primary neurological impairment leads to a sequence of intracranial and extracranial changes as well as the development of four



stages in migraines: warning, aura, headache and the postdrome (16).

The popular vascular theory, which considers the dilation of the vessels to cause migraine headaches and the stiffness of it as the cause of "aura," is no longer considered as a dynamic

theory. Even though vasodilatation occurs throughout migraine headache attacks, probably a secondary phenomenon is due to instability in the central nervous system control mechanism (20).

**Table 1.** The most important herbal compounds used in the treatment of migraine (Shaqeeqa) in the authentic and reliable manuscripts of Iranian traditional medicine

Name of the plant	Scientific name	The most important ingredients	Possible Mechanism	References
Chicory	<i>Cichorium intybus L</i>	Sesquiterpene lactones specially 8-deoxy lactucin	inhibitors of cyclooxygenase 2	5
Chamomile	<i>Matricaria chamomilla L</i>	Flavonoids(apigenin and its glaucosides derivatives) and essential oil (like chamazulene)	Anti-inflammatory and inhibitors of cyclooxygenase	5
Saffron	<i>Crocus sativus L</i>	Crocin and Safranal	Anti-inflammatory effects	5
Fig	<i>Ficus carica L</i>	Organic acids like malic and shikimic acids	Anti-inflammatory effects	5
Opium	<i>Papaver somniferum L</i>	Codeine and morphine.narcotine Papaverine and thebaine	Analgesic Function	5
Mandrake	<i>Mandragora officinarum L</i>	Withanolides.fatty compounds.coumarins. Sterol and tropane alkaloids	Analgesic	5
Plum	<i>Prunus domestica L</i>	Flavonoids. Ethanol. Carbohydrates. Sterols	Anti-inflammatory and analgesic effects	5
Mustard	<i>Brassica Nigra L</i>	Phenolic compounds (gallic acid.querctin.ferulic acid.caffeic acid and rutin)	Anti-inflammatory and analgesic effects	5
Cannabis	<i>Cannabis Sativa L</i>	Cannabidiolic acid	Reducing nausea and vomiting, treating chronic pain and muscle spasm	21
Violet	<i>Viola odorata L</i>	butyl-2-ethylhexylphthalate, tetrahydro-4,4,7a-trimethyl-2(4H)-benzofuranone	Antioxidant activity	22
Alcea leaf	<i>Althaea officinalis L</i>	Mucilage, Flavonoid, Glycoside coumarin scopoletin	Anti inflammatory activity	22
Pumpkin seeds	<i>Lactuca sativa L</i>	Glucosides (lactuberin A and lactuberin B), phenolic constituents, caffeic acid, chlorogenic acid	Antioxidant	23
Thyme	<i>Thymus vulgaris L</i>	Thymol,-terpinene, p-cymene, carvacrol, terpinolene, -terpinene, -terpineol, tujene	Antioxidant	24
Scilla maritime	<i>Urginea maritima</i>	Proscillaridin A	Effective against congestive heart failure, anti-tumor, T-cell inhibitor, analgesic	25
Dill	<i>Anethum graveolens</i>	furanocoumarin, polyphenols, mineral, gallic acid, catechin	Anti-inflammatory, antinociceptive, smooth muscle relaxant, and increased progesterone concentration.	26
Rose	Rosa	flavonoids: linalool, nerol, geraniol, nonadecene, n-tricosane, hexatriacontane, n-pentacosane, quercetin,	antioxidant	27

## Conclusion

Diagnosis of temperament, diet modification, using medicinal herbs and treatments such as massage, bloodletting, dry cupping and purgation of the body from various additional materials were considered as important components of treatment protocol for migraines.

The differential diagnosis of migraine from other types of headaches, as well as providing a unique and specific theory for the cause of migraine in the works of Rhazes and Avicenna is surprising. Also, the use of multiple therapies in the treatment of migraine and the selection of herbs with sedative, anti-inflammatory and dermal compositions make it necessary to consider and study the experiences of traditional medicine practitioners again.

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