History of Neurology
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Ibn Sina (Avicenna) on Local Treatment of Migraine Compared with Recent Evidence

SUMMARY

Although the history of medicine is now quite accessible, the profound positive relationship for example, the medieval medical works on the further development of medicine is less discussed. In the present study I will investigate the local treatment of migraine suggested by Ibn Sina (Avicenna). Interestingly, Ibn Sina's prescriptions regarding the local treatment of migraine show immense similarities between his text and current knowledge.

Key words: Ibn Sina, migraine, local treatment

Studying historical medical texts and illuminating their real meaning add significant contributions to the related sciences. Islamic cultures are among the most interesting, complex, and dynamic in the world, but at the same time, they are among the least known in the West (1).

Medicine was a central part of medieval Islamic culture. Responding to circumstances of time and place, Islamic physicians and scholars developed a large, complex medical literature that explored and integrated the theory and practice of medicine. This extensive literature was not specialized like modern medical literature but was incorporated with learned traditions in philosophy, natural science, mathematics, astrology, alchemy, and religion (1).

Built on the theoretical and practical knowledge first developed in Greece and Rome, Islamic scholars made the vast Greco-Roman medical knowledge more accessible by writing encyclopedias and summaries (1).

Ibn Sina (Avicenna) was born in 980 in Bukhara (Uzbekistan) and died in 1037 in Hamadan (Iran) (2). In the history of medicine he stands out like other great contributors, such as Hippocrates and Galenos in being able, through his writings, to influence medical knowledge and practice for many centuries. Ibn Sina created one of the first truly scientific encyclopedias, which covered logic, natural sciences, psychology, geometry, astronomy, arithmetic and music.

In his The Canon of Medicine, Ibn Sina surveyed the entire medical knowledge available at the time from Greco-Roman and Islamic sources, supplementing this information with his own original contributions. This enormous work consists of 5 books containing approximately one million words on 1000 pages, written completely systematically. He begins his Canon with the following words: "It is my heart's desire, to start off with speaking about the general and common principles of both parts of medicine, that is, theory and practice…" (3).

The Canon gained widespread popularity in the West only after the introduction of typography in the 15th and 16th centuries, but it remained a force in the medical sciences in much of Europe until the end of the 18th century when it more or less disappeared. Today there is only one edition in a modern language (Russian), which severely limits an actual interpretation of this work (4).

The Canon of Medicine was the first book dealing with evidence-based medicine, experimental medicine, (5) clinical trials, randomized controlled trials, (6,7) efficacy tests, (8,9) risk factor analysis, and the idea of a syndrome in the diagnosis of specific diseases (10).

This emphasis in the Canon on testing medicines laid the foundations for an experimental approach to pharmacology (11). The Canon laid out the rules and principles for testing the effectiveness of new drugs and medications, which still form the basis of clinical pharmacology and modern clinical trials: 12, "Some of his prescriptions are still used today" (17).

No less than 700 preparations of medications, their properties, mode of action and their indications are described in The Canon of Medicine, so it is little wonder Ibn Sina devoted a whole volume to simple and compound drugs in his encyclopedia. This volume credits many of them to a variety of Arabic, Greek and Indian authors. Along with Ibn Sina's original contributions, the volume also includes certain information on drugs imported from China. Using his own expertise, he was often critical of the descriptions given by previous authors and revised many of their descriptions (11).

While Europe endured the Dark Ages and the Catholic Church restricted the use of aromatics to religion and ritual, aromatherapy continued to flourish in the East, and the Arabs picked up aromatherapy where it had trailed off in Europe (15).

Table Comparison of Ibn Sina's local treatments of migraine and recent evidence

Ibn Sina's local treatments of migraine	Recent evidence
I. Cupping and venesection on frontal and temporal arteries.	Wet-cupping leads to clinical relevant benefits for primary care patients with headache (18).
II. Apply solution of aloe	Application of aloe vera cream on the surgical site is effective in reducing pain (19).
III. Apply local anaesthetic as aphion (khashkhash) on temporal regions	Local application of morphine can suppress the glutamate-evoked activities of the C- and A−fibers, studies have demonstrated that local application of morphine in peripheral tissues resulted in a significant anti-nociceptive effect (20).
IV. Apply alyabroh (Hyoscyamine)	Hyoscyamine (1 - 10 (g/kg, s.c.) dose-dependently increased the local anesthetic effect of procaine (50 (g/ml) and lidocaine (50 (g/ml) in the conjunctival reflex test in the rabbit (21).
V. Apply Camphor	Camphor causes a local dilation of the capillaries of the skin, producing warmth, redness, and sometimes itching; slight anesthesia follows. In this manner, it uses upon wounds, neuralgic and other painful areas (22).
VI. Apply peppermint	Topical application of peppermint oil may be effective in the treatment of tension headache. Because of its relaxing effects on smooth muscle (23)
VII. Apply rose oil	Relieves headaches, nausea and weakness: Inhaling the flavor of rose oil, will effectively relieve headaches, nausea and weakness and other symptoms (24).
VIII. Apply rue oil	Rue oil and infusions of rue were formerly used as antispasmodics and emmena gogues. Rue oil is a powerful local irritant. It is recommended in herbal treatment of insomnia, headaches, nervousness, and abdominal cramps (25).
IX. Paul tablet, compositions of that tablet	
1.Myrrh	Furanoeudesma-1,3-diene isolated from myrrh showed significant analgesic properties; may affect opioid receptors in brain membranes, which influence the perception of pain (26-31).
2. Thapsia	The properties of this plant reside in its resin, which has been employed as a vesicating or irritating plaster in rheumatic, neuralgic, and other local pains, and in all cases in which a counter-irritant is indicated (32,33).
3. Ferbion	Both the alcoholic and aqueous extract obtained from fresh stem of Euphorbia nerifolia Lii. revealed significant local anaesthetic activity (34,35).
4. Natron	Alkalinization of local anesthetics has been used to increase the speed of onset of nerve blocks (36).
Ibn Sina local treatment of migraine	
5. Haltit (Ferula asafetida)	Using the dried gum, this herb helps relieve headache pain and shows promise in treating migraines and tension headaches when mixed with water (37).
6. Sakbing (Galbanum ferula galaniflua)	Galbanum essential oil has been beneficial as an analgesic, in inflammations, muscular aches and cramps, nervous tension (38,39).
7. Pepper extract (capsaicin)	Topical capsaicin may relieve arterial pain in absence of and during a migraine attack in a substantial number of patients experiencing scalp arterial tenderness (40)

These components should be mixed in the form of tablets, if needed crushed and mixed with acetic acid and applied on the head for six hours and then washed. Acetic acid is an excellent polar solvent (41).

APPENDIX I

Ibn Sina's text transcribed into Latin alphabet	Translation into English
Elagoha al fassed ala erg al-gabha wa al-sadgh	Cupping and venesection on frontal and temporal arteries yanfah Naqi Al -saber Apply Solution of Aloe
Al-tadmeed bel mawad almokhaderah ka-	Apply local anaesthetic as morphine on temporal regions
Alaphione (khashkhash) Ala al-sadghain	
Wa al-yabroh	Apply al-yabroh
Wa al-kaphor	Apply Camphor
Yantafeon be tamad men suzab wa nana wa dehn al-ward	Rue oil, peppermint and rose oil are beneficial
Wa kathalek al-telaa be Akras Polus wa tatakawn men Mur, Tafsia,	Also, using Paul tablets which consisted of Myrrh, Thapsia,
Ferbion, Natron, Haltit, sakbing, wa felfel yotakhaz Akras toshaq	Ferbion, Natron, Ferula asafetida, Galbanum Ferula, Galaniflua, pepper extract
maa khal wa yotlaa wa yotrak 6 saat thoma yastahem fa enaho Ajeeb.	These components should be mixed in the form of tablets, if needed crushed and mixed with acetic acid and applied on the head for six hours and then washed, it is very effective.

Figure 1. Photograph showing page 302 of The Canon of Medicine in Arabic, which is available in the Saab Medical Library in American University of Beirut, Lebanon

New methods and approaches for using aromatic plants were developed, some of which are still in use today, not to mention the distillation process, which is still the primary method of extracting essential oils from plant material (16). Ibn Sina discovered that the coiled cooling pipe greatly improved the condensation of steam and aided in the collection of the essence.

Although the history of medicine is now quite accessible, the profound positive relationship of, for example, the medieval medical works on the further development of medicine is less discussed. In the present study, I intended to consider the local treatment of migraines as discussed by Ibn Sina.

Interestingly, the local treatment of migraines showed immense similarities between current knowledge and the text written by Ibn Sina, as summarized in the Table.

An increase in the availability of a translation of his work, The Canon of Medicine, would spread recognition of his research and expertise, especially in the study and treatment of the nervous system.

It could be concluded that Ibn Sina's approach to migraine management complies with modern findings, and even in the routes of drug administration, his points are astonishing.

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