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Pioneering Unani Scholars in Anaesthesia and Pain Relief: A Historical Perspective

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ABSTRACT :

The history of anaesthesia dates back thousands of years, with ancient civilizations using various methods to alleviate pain during surgical procedures. The Unani system of medicine, deeply rooted in Greek, Persian, and Arabic traditions, has made significant contributions to the understanding and application of anaesthesia and analgesia. This study explores the pioneering work of Unani scholars in the field of anaesthesia and pain relief, highlighting their innovative techniques and pharmacological advancements. Unani physicians such as Ibn Sina (Avicenna), Abul Qasim Zehravi (Abulcasis), Ali bin Esa Kahhal (the Oculist), and Ibn al Quff (al-Malikī al-Masīḥī) etc. played a crucial role in developing and refining the methods of pain management. Avicenna's seminal work, Al Qanoon Fil-Tibb, provided a detailed understanding of pain physiology and introduced three types of Rooh (vital spirits) that influence consciousness and sensation. He classified pain into multiple categories, many of which align with modern pain theories. Ibn al Quff, in his surgical manual Al-Umdah Fi Sinaat Al Jirahah, described the administration of anaesthetic substances and emphasized the need for specialized personnel (Al-Tabbaee means the Anaesthetist) to supervise pain relief during surgical interventions. Unani scholars pioneered the use of Soporific Sponges (induction of anaesthesia throughinfusion) to infuse Opium, Hyoscyamus, Mandrake, Cannabis, etc. to induce general anesthesia which laid the foundation for modern anesthetic practices. Despite their groundbreaking discoveries, Unani scholars intentionally omitted detailed descriptions of anesthetic preparations in their textbooks to prevent its misuse. This secrecy underscores the ethical considerations of their time.

Keywords: Soporific sponges;Rooh; Bloodletting; Anaesthesia; Analgesia

Introduction:

The history of disease and its treatment dates back as far as the emergence and evolution of humankind. In prehistoric times, early humans often viewed disease as a curse inflicted by evil spirits, leading them to treat patients through invocation and exorcism. As human knowledge expanded through evolution, people gained a deeper understanding of the natural forces shaping their lives. Over time, humans recognized that health services are essential for promoting, restoring, and maintaining the well-being of society. These services encompass illness prevention, health promotion, disease management, and the rehabilitation and palliative care of those suffering from illness or injury.

The progress of human civilization has been shaped by the efforts of countless individuals across different fields, from scientists and philosophers to doctors, academics, entrepreneurs, and athletes. These figures have not only impacted society but have also left an indelible mark on history.It is often said that knowledge of history is comprehensive knowledge. Delving into the history of Unani medicine and surgery reveals remarkable contributions from Unani physicians and surgeons, whose work continues to influence modern medical practice.

In the realm of modern medicine, anesthesia is defined as the partial or complete loss of sensation, with or without loss of consciousness, resulting from disease, injury, or the administration of anesthetic agents, typically through injection or inhalation1. The history of anesthesia stretches back thousands of years. To trace the evolution of medical and surgical practices, it is helpful to examine the development of human societies. Some of the earliest medical texts are found on cuneiform tablets and in papyri, such as the Ebers and Edwin Smith papyri, the latter of which is known as the surgical papyrus. These ancient texts mention the use of herbal substances like Belladonna, Cannabis, and Mandrake by the Assyrians. The ancient Egyptians also utilized Opium for treating colic and diarrhea2. Before the 15th century, the most common anesthetic techniques likely involved administering large amounts of alcohol, with or without opium, and using a wooden stick between the teeth to prevent biting the tongue. Notably, some of the substances used in this era, such as Opium, continue to play a role in modern medicine3.

Anesthesia in History :

The earliest mentions of anesthesia in Unani medicine can be traced back to the renowned physician Dioscorides, who recommended sleeping potions to enable painless surgeries. These potions, composed of opium, alcohol, and mandragora root, were effective as general anesthetics in the absence of modern alternatives.

Celsus, a prominent writer of the early first century A.D., advocated the use of wild poppy juice to treat various ailments, including headaches, ulcers, ophthalmia, toothaches, respiratory issues, intestinal pain, and inflammation of the womb. He also prescribed it for pain affecting the hips, liver, spleen, and ribs. Additionally, he recognized henbane as a sedative. Celsus was among the first to emphasize the importance of monitoring the four cardinal signs of inflammation—calor (heat), rubor (redness), dolor (pain), and tumor (swelling)—after surgery.

The surgical knowledge of ancient Indians scholars was highly advanced, as the developed specialized instruments and techniques for wound cleansing and bandaging. The ancient Indian text Sushruta Samhita, dating back to around 400 BC, recommended the use of alcohol before surgery to induce insensitivity to pain. Similarly, the Chinese pioneered medical advancements, including acupuncture and the use of opium powders for inhalation.

Hippocrates (c. 460–c. 370 BC) and the esteemed physician Galen cautioned against the excessive use of narcotics like opium, acknowledging their potential dangers. They primarily recommended opium for treating colic and severe pain.

Concept of Anesthesia in Unani Medicine :

Ancient Unani scholars identified three distinct types of Rooh (spirit) in the human body:

1. Rooh-e-Haiwani: Responsible for life and preventing putrefaction.
2. Rooh-e-Tabaie: Responsible for nourishment and growth of the body.
3. Rooh-e-Nafsani: Responsible for consciousness, orientation, and sensation.

According to Unani medicine, any substance or condition that obstructs the flow of Rooh into the Aasaab (nerves) leads to a loss of sensation and movement, resulting in local or regional anesthesia. On the other hand, if a substance or condition constricts the brain and spinal cord, preventing the penetration of Rooh-e-Nafsani, it induces a complete, generalized anesthesia, marked by a loss of consciousness and orientation8.

Pioneering Unani Scholars and the development of anesthesia and pain relief :

Abul Qasim Zehravi: The Father of Surgery

Abul Qasim Zehravi (936–1013), widely regarded as the father of surgery, made pioneering contributions that shaped the field for centuries. His magnum opus, Kitab al-Tasrif, is a 30-volume encyclopedia of medical knowledge, with its final volume offering a detailed account of surgical techniques. This seminal work remained a cornerstone of medical education and practice for over 500 years.

Renowned for his surgical expertise, Zehravi performed a vast array of both major and minor operations, demonstrating remarkable precision and innovation. However, his writings do not provide explicit details on the methods used to anesthetize patients before surgery, nor do contemporary medical texts from his era extensively discuss anesthesia.

Despite this absence, it is plausible that Zehravi employed anesthetic techniques similar to those of his contemporaries, such as Ali bin Isa Kahhal and Ibn Sina, who are known to have used soporific sponges infused with herbal sedatives to induce unconsciousness. Given his extensive surgical knowledge and advancements, it is likely that he was familiar with and applied similar methods in his practice.

This revision enhances readability, adds depth, and strengthens historical connections while maintaining accuracy. Let me know if you'd like any refinements!

Ali bin Isa Kahhal: A Pioneer in Ophthalmology and Anesthesia

Ali bin Isa Kahhal (940–1010) is widely recognized as one of the most influential figures in medieval ophthalmology and is credited with the first documented use of soporific sponges for anesthesia. His contributions to eye surgery and medical literature were groundbreaking, shaping the practice of ophthalmology for centuries.

Kahhal's most notable work, Tadhkirat al-Kahhalin (The Notebook of the Oculists), is regarded as the most comprehensive treatise on ophthalmology of its time. This text, which detailed over 130 eye diseases and their treatments, remained a foundational reference in both the Islamic world and Europe for generations. His surgical expertise extended beyond ophthalmology, demonstrating a profound understanding of the human body and medical procedures.

One of his most significant innovations was the use of Soporific Sponges, an early form of anesthesia. These sponges were soaked in a mixture of herbal sedatives, such as opium, henbane, and mandragora, and then placed over the patient's nose and mouth to induce unconsciousness before surgery. This technique marked a major advancement in surgical practice, minimizing pain and making complex procedures more tolerable for patients.

Kahhal's pioneering use of anesthesia paved the way for future medical advancements, influencing physicians like Ibn Sina (Avicenna) and setting the stage for more sophisticated anesthetic techniques in later centuries. His contributions highlight the rich legacy of Islamic medicine and its profound impact on the evolution of surgical practices worldwide.

Ibn Sina's Contributions to Analgesia and Anesthesia

Ibn Sina (Avicenna), the esteemed author of Al-Qanun fi al-Tibb (The Canon of Medicine), played a pivotal role in advancing the understanding of analgesia and anesthesia. His insights into pain physiology were remarkably sophisticated for his time, identifying two primary causes of pain: Sue Mizaj Mukhtalif (imbalance in temperament) and Tafarruq-e-Ittisal (disruption of continuity).

He used the term Waja' (ache) as a broad reference for pain, describing it as a sensation of disharmony or imbalance—essentially the opposite of pleasure—resulting from a disturbing stimulus. To further refine this concept, he introduced the term Alam to refer specifically to the subjective, perceived experience of pain.

Avicenna proposed that pain arises from sudden changes in an organ's temperament, which disrupt the equilibrium of the four Humours and manifest as illness. He observed that gradual changes do not typically induce pain, and if a disturbance persists over time, the body may become desensitized—an idea that parallels modern theories of pain adaptation and neural desensitization.

Building on the work of Galen (d. 210 AD), Avicenna affirmed that nociceptive pain signals are transmitted through the nerves to the brain, which serves as the central hub for pain perception (Alam). However, he expanded on Galen's ideas by suggesting that pain could arise from a variety of factors beyond physical injuries, such as internal imbalances and neurological conditions.

In a groundbreaking contribution to pain classification, Avicenna identified 15 distinct types of pain, recognizing its multifaceted nature. Unlike Galen, who had categorized pain into just four types—pulsating, weighty, stretching, and tearing—Avicenna's classification included: itching, pulsating, coarseness, pricking, stretching, tearing, fracturing, tenderness, piercing, stabbing, heaviness, numbing, fatigue, and biting.

This detailed system bears a striking resemblance to modern pain classification models, such as the McGill Pain Questionnaire, which uses 20 descriptors—13 of which closely align with Avicenna's taxonomy. Additionally, he was among the first to recognize that pain can persist even after the original stimulus is removed, a concept now understood as chronic pain, neuropathic pain, and psychogenic pain.

Avicenna's contributions to the study of pain and anesthesia laid a foundation that influenced medical thought for centuries, bridging ancient theories with modern neuroscientific principles. His holistic approach to pain management underscores his remarkable foresight and enduring impact on medicine.

Avicenna made significant contributions to the field of analgesia and anesthesia. He referred to pain relief as Taskin, an Arabic term meaning "to silence" or "to soothe." In the context of medicine, Taskin specifically denoted analgesia. He outlined three primary methods for achieving pain relief:

1. Balancing the Mizaj (Temperament): Restoring the body's natural equilibrium to alleviate pain caused by imbalances.
2. Neutralizing the Painful Stimulus: Addressing the root cause of pain by eliminating or counteracting the harmful agent.
3. Administering Anesthetic Agents: Utilizing a variety of medicinal substances to induce insensitivity to pain and facilitate surgical procedures.

Avicenna's systematic approach to pain management demonstrated a profound understanding of both physiological and pharmacological principles, influencing medical practices for centuries.

Ibn al-Quff: Contributions to Surgery and Anesthesia

Ibn al-Quff (1233–1286) was a distinguished physician, surgeon, and scholar whose contributions to surgical science were highly influential. His most renowned work, Al-'Umdah fi Sina'at al-Jirahah (The Pillar in the Art of Surgery), is an extensive surgical manual consisting of 20 chapters. Among these, the chapter 17 is dedicated to traumatology, while chapter 19 systematically discusses surgical conditions and their treatments from head to toe.this chapter is one of the most significant aspects of Ibn al-Quff's work is his comprehensive discussionon pain relief and anesthesia. He emphasized the importance of Al-Tabbaee (the anesthetist) in surgical procedures, advocating for a specialized physician to supervise the administration of analgesia to ensure patient safety during operations. His book outlines the use of various substances that induce sleep and insensibility, including:

- Opium
- Mandrake
- Hyoscyamus albus (White Henbane)
- Belladonna
- Cannabis sativa/indica
- Wild Lettuce

Theory of Pain Relief: True vs. Untrue Analgesia :

Ibn al-Quff distinguished between two fundamental types of pain relief:

1. True Pain Relief: This is achieved by addressing the underlying cause of pain. He referenced both Galen's concept of pain resulting from the separation of continuity (e.g., wounds) and Avicenna's view that pain arises from structural misalignment or imbalance. By treating the root cause, true pain relief is attained.

2. Untrue Pain Relief: This involves the use of Al-Mukhaddir Adviyaat (anesthetic drugs) to suppress pain perception without treating its underlying cause. Ibn al-Quff highlighted this as the method most relevant for surgeons, as it allows for pain-free surgical intervention.

Ibn al-Quff's contributions to surgery and anesthesia reflect an advanced grasp of medical science for his time. His emphasis on specialized anesthetists, the classification of pain, and the use of anesthetic agents laid the groundwork for future developments in surgical analgesia. His work remained a crucial reference in Islamic and European medicine for centuries.

He described four mechanisms through which these anesthetic drugs relieve pain, demonstrating a sophisticated understanding of their physiological effects.

The four mechanisms through which the narcotic/aesthetic drugs relieve pain,

- Firstly, by its extreme Buroodat (extensive cooling effect of the drug) it blocks the conduction of Rooh and prevents the painful sensation from penetration, so it reduces the feelings and perceptions thus the pain is relieved or prevented.
- Secondly, the extremely Barid effect of the drug also hardens the pathways of Rooh and thus prevents it from penetration and circulation.
- Thirdly, painful feeling happens by the presence of Hararat and Rutoobat, and the aesthetic drugs are is Barid and Yabis, thereby antagonizes it. This reduces its force and makes it weak.
- Fourthly, since the aestheticdrugs also have some poisonous effect, so the sensory forcesare reduced, resulting in pain reduction.

There was a lot of criticism between modern anaesthesiologist in use & method of application of soporific sponges but when we talk about Ibn al Quff who lived in a period where some criticism was directed to old theories; it led to the production of new ideas like the explanation of pulmonary circulation by Ibn al Nafis and the capillary links to venous side of the circulation by Ibn al Quff. The truth remains that the technique of use of "soporific sponge" is purely in Arabic and was not known before. The "soporific sponge" was put in juice of Hashish, Papaver, and Hyoscyamine, and then dried under the sun. During use, it was humidified again, and placed at the patient's nose so that it gets absorbed by the mucus membranes, causing deep sleep and relief of surgical pains. The discovery was introduced into Europe and was practiced until the 18th century when modern inhalational anaesthesia was introduced in the 1840s2.

Besides the Soporific sponges, there were some other drug combinations as anesthetic agents that were used before surgical procedures. There are various anesthetic drug formulations among which few are mentioned below as per Qarabadeen-e-Dara-Shikohi.

1. Finely ground healthy fleshes are dumped in horse dung until the flesh is putrefied, and there is the formation of maggots, when these maggots get mature and turn black, they are collected and kept safe in a sealed container. When these maggots die and turn mummified,they are triturated (Kharal) with the help of pure Musk and Ghaliya. This formulation is ready to use as a strong inhalational anestheticagent. After the completion of the procedure, for reversal old vinegar is poured drop by drop in nose of the patient.4
2. Black cannabis soaked in fresh coriander extract and dumped for 72 hrs in animal dung until it is putrefied. These processed seeds of cannabis are ground and tablets are made with the remaining water used as a binder and are dried in the shade.For instant generalizedanesthesia, one tablet orally is sufficient.
3. A preparation is made with a fine powder of Giyah-e-Mardum and Afyoon in equal quantities and soaked in a sufficient amount of water (4 fingers above the mixture) and dumped in animal dung for one week after that the mixture is kept in direct sunlight for 5 days, now we can use it as a potent inhalational anesthetic agent. For precautionary measures,an anesthetist has to use cotton soaked in almond oil as nasal plug to prevent self-anesthetization.

Besides these medicinal formulations there are some other formulations which were used in highly pain-sensitive persons without any unwanted & unpleasant effect i.e. combination of wine of Shelum, wine of Ood Hindi and wine of Ushna which have property to sensitize the nervous system quickly so use as a highly potent inhalational anaesthetic agent.

Non-pharmacological techniques of anesthesia in Unani medicine

1. Application of Ice at the Site of Surgery: Ibn-e-Sina, in his Al-Qanoon Fi-al-Tibb, advocated for the use of ice as a method of local anesthesia during surgery. He explained that applying ice for a certain period suppresses the Hararat-e-Ghariziya (core body temperature) locally. This cooling effect disrupts the flow of Rooh (vital spirit) in the targeted area, resulting in numbness and a loss of sensation at the site, thereby facilitating surgical procedures4.
2. Carotid Massage: During the Greek and Roman periods, compression of the carotid artery, also known as the "Artery of Sleep," was used to induce unconsciousness. This technique was also employed by the Assyrians and Egyptians, particularly for performing circumcisions on children. The compression of this artery was believed to suppress consciousness temporarily, allowing for less painful procedures5, 6.
3. Bloodletting: Hippocratic physicians prescribed various treatments for painful conditions, with bloodletting, or phlebotomy, being one of the most common. This procedure was used to treat a range of ailments, as described in Hippocrates' Regimen in Acute Diseases. While bloodletting was often applied to alleviate pain, it should be noted that its primary purpose was analgesia, not anaesthesia. The treatment was considered superior to other methods, though it was not designed to induce a complete lack of sensation, as anaesthesia does7.

Reason behind no description of anaesthesia in Unani literatures

Ibn Sina, Ibn Zuhr, Ibn Abbass Al-Majoosi, Ibn Quff, Ibn Alhaisam, Isa Kahhal and other legends of Unani System of medicine described the minor and major surgical procedures with detail in their textbook. This is a mystery in itself how these surgical procedures are performed without anaesthesia? This is a question in itself why these renowned surgeons of Unani medicine have not mentioned any description of anaesthetic procedures. This is best answered by Hakeem Abdul-Latif Falsafi in his research article "Daaru-e-Behooshi" (the anaesthetic drugs). According to him before any surgical procedures all patients were anaesthetized with certain type of medication (as mentioned above) but these combinations were not mentioned in literature so that these should not be misused for any criminal purpose because most of the preparation consists of single drugs even the common man can easily prepare these combinations at home. In contraindication to this the modern anaesthetic agents are formulated in such a way that it is impossible for a common man to prepare the combination at home even if the contents of combination are well known to him, because it needs a well-established scientific laboratory and perfect knowledge of chemistry and pharmacology for preparation.

DISCUSSION AND CONCLUSION :

If the inventions and feats of Arab scholars are keenly observed then it can be undoubtedly claimed that present form of anaesthesia is nothing but the modifications and continuations of previously used anaesthetic sponges. But it is debatable that up to which century these sponges were used in western countries, this interval ranges from 15- 19 century, but most of the historians claimed that it was up to 18th century. But logically there in no controversy between opinion of historians. But the real thing is that soporific sponges were prepared and used same as that of Arabs up to 15th century by western countries, between 15-18 century certain modifications were made i.e., use of active constituents (Alkaloids) instead of crude drug for the preparation of anaesthetic sponge which proved to be more potent. At the end of 18th century these active constituents were replaced by chemical combination (such as Ether& Chloroform etc). Later on, the sponges were replaced by different sizes of masks and finally the field of anaesthesia was boomed by the invention of Boyle's Apparatus. So nowadays it can be claimed proudly that the present principles and guidelines of anaesthesia were laid before many centuries ago (Medieval Period) by Arab scholars. But unfortunately, Arab Scholars were not praised for their marvelous work in the field of anaesthesia, even western scholars patented their research and inventions on their own names. Due to these circumstances Arab scholars were forgotten in field of surgery and anaesthesia and got lost in the shades of history. The aim of this research article is to highlight and remember the remarkable works and contributions of Arab Scholars in the field of Anaesthesiology and to aware the modern world especially the persons related to Unani system of medicines that how Arab Anaesthetists made anaesthesiology as simple, advanced and successful. This is the need of an hour to include their glorious contributions in syllabus of Unani medicine.

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