ejpmr, 2025, 12(4), 223-227

SJIF Impact Factor 7.065

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Review article

ISSN 2394-3211

EJPMR

CONTRIBUTION OF GREEK-O-ARAB PHYSICIAN IN TASHREEH OF QALB (ANATOMY OF HEART); A COMPREHENSIVE REVIEW

Dr. Varka*[1], Dr. Abdul Malik[2], Dr. Mohd. Abu Bakar Quadri[3] and Dr. Md. Imran Khan[4]

[1]P.G. Scholar, Department of Tashreeh-ul-Badan(Anatomy), State Takmil ut Tib College & Hospital, Lucknow, UP, India.

[2]Associate Professor, Department of Tashreeh-ul-Badan(Anatomy), State Takmil ut Tib College & Hospital, Lucknow, UP, India.

[3]Associate Professor& Head, Department of Tashreeh-ul-Badan(Anatomy), State Takmil ut Tib College & Hospital, Lucknow, UP, India.

[4]Assistant Professor, Department of Tashreeh-ul-Badan(Anatomy), State Takmil ut Tib College & Hospital, Lucknow, UP, India.

***Corresponding Author: Dr. Varka**

P.G. Scholar, Department of Tashreeh-ul-Badan(Anatomy), State Takmil ut Tib College & Hospital, Lucknow, UP, India.

Article Received on 03/02/2025 **Article Revised on 24/02/2025** **Article Published on 16/03/2025**

ABSTRACTS

Heart is considered as the chief of Aaza-e-Haywaniyya (vital organs) **Arastu** was one of the anatomists to believe in the centrality of the *Qalb* (Heart), Arastu in his book 'On the Parts of Animals' declares that the *Qalb* (Heart) is placed in the center of the chest, located more on the left side and lying above the lungs, near the bifurcation of the trachea. The pericardium was first described by Hippocrates. Regarding pericardium, he says that the *Qalb* (heart) is enveloped in a smooth membrane. The purpose of the fluid is to protect the pulsation of the *Qalb* (Heart) and another function is to alleviate its heat. *Jālīnūs* (Galen) believed the heart had two ventricles out of which the right one was thin and contained blood, while the left one was thicker and contained air. He recognized that the left ventricle was more hypertrophied than the right ventricle. **Ibn Sīnā** He described the heart's base as resembling a root or cartilage, providing solid support for the heart. Ibn Sīnā (Avicenna) in his book "The Canon of Medicine", writes there are three ventricles within the heart, two ventricles that are relatively large and a middle one. The middle ventricle is a nutrient reservoir for the heart. He also describes about atria in the Canon of Medicine**,** that there are two processes at the entrance of the heart. They are shaped like an ear. **Ibn al-Quff Masīḥī** writes in his book *Kitāb al-'Umda fi'l Jarāḥat* that the heart has four openings out of which two are on the right side, from one opening blood flows from the liver to the heart. The second orifice is that from which the pulmonary artery is connected.

KEYWORDS: Aaza-e-Raeesa, Vital organ, Aaza-e- Murakkaba, Qalb (Heart).

INTRODUCTION

The Unani System of Medicine is a medical system, which deals with the management of health and disease.[13] This system diagnoses and treats the patients as a whole looking their overall physical, mental and spiritual aspects. Unani Physicians give prime importance to diet and state of digestion in a person, in both health and disease.[7] In his book **On the Heart,** BUQRAT suggested that the shape of the heart could be described as pyramidal or spherical[1-2] ARASTU in his book **On The Parts Of Animals** declares that heart is placed in the center of the chest, located more on the left side and lying above the lungs, near the bifurcation of the trachea.[3] Galen declared that the heart is conical in shape having a round and wide shaped base, the head, and a narrow and thin sharpening point.[5] According to him its base is sometimes called its head.[4] Jalinus describes that the pericardium is a hard coat that originates from the heart's head extends to its bottom and is attached to the sternum.[27] The heart is suspended within the pericardium, ensuring its safety.[5] IBN RUSHD in his book **Kitabul Kulliyat** states that: "*a thick membrane surrounds the heart which adheres to the heart only at the root*.[29] Arastu held a distinctive belief that the heart possessed three "ventricles" or cavities.[28] while Buqrat belief that the heart has two ventricle. Herophilus, an Alexandrian physician, stood among the early pioneers in advocating that the heart consisted of "four chambers".[24] Ibn Nafis held the view that there were not three ventricles in the heart.[19] He explicitly rejected Aristotle's triventricular heart model.[24] In his book **Kitab Sharh Tashreeh al-Qanun**, which is translated as **A Commentary on Avicenna's Canon Anatomy**, IBN NAFIS proposed a different

perspective. According to him, the heart consisted of "two ventricles and two atria".[29] Erasistratus described the atria as ear like structures and believed that they were dilatations of the vena cava and the pulmonary veins.[34] Importantly, he did not consider the atria to be part of the heart, holding the view that they were separate structures.[83] RUSHD discusses about atria in **Kitabul Kulliyat,** according to him: "Heart has two protrusions similar to that of ears; one on the right side called uzn aeman (right auricle), another on left side uzn aesar (left auricle).[5]

IBN AL-NAFIS, in his book **Kitab Sharh Tashreeh al-Qanon**, translated as **Commentary On Avicenna's Canon Anatomy**, explains that the atria are divided from the ventricles by the tricuspid and bicuspid (mitral) valves.[82] Hippocrates identified two types of vessels. The first were thought to carry air to the left ventricle and are now known as the pulmonary veins. Another significant vessel transported air to the right ventricle and simultaneously conveyed blood to the lungs, and it is recognized today as the pulmonary artery.[19-24] Tibbe Unani, a comprehensive medical system, meticulously deals with the various states of health and disease.[15] The fundamentals, diagnosis and treatment modalities of this system are based on the scientific principles and holistic concepts of health and healing. Accordingly, it considers the individual in relation to his environment and stresses on health of the body, mind and soul.[7]

Citation; Varka Nishat, Abdul Malik, Mohd. Abu Bakar Quadri, Md Imran Khan, (2025). Contribution of Greek-o-Arab physician in Tashreeh of Qalb (Anatomy of Heart); A Comprehensive Review.

According to **Ibn-Alquf**, Heart (Qalb) have 3 type of fiber and 3 ventricle (Batnain) Heart is covered by a hard membrane there are many ligament connected to the heart (Qalb).[8]

Aristotle greatest natural philosopher of his Era, he stated that they like all blood vessel arose from heart and not from head and brain. He understood that there was both expansion and contraction with each heart beat.[3]

In heart Function of semilunar and tricuspid valve (Samamate qalb) firstly describe by ''**Erasistratus'**'and these valve responsible for unidirectional blood flow.[10]

Galen believe that right side of heart was derivative of liver(kabid) from which blood exits to pass through the vena cava pulmonary artery (wareede shiryani) recognize by galen as arterial vein delivered blood to lung (riya) which pass into left side of heart.[21]

OBJECTIVES

The primary objectives of this thorough research paper are as follows:

To acknowledge the significant role played by Unani physicians in providing a detailed understanding of the Tashrih of Qalb (Anatomy of Heart).

MATERIAL AND METHOD

Classical Unani text was searched extensively to compile the literature related to Tashrih of Qalb In this paper the literature was extracted from Unani Classical books Al Qanun-fit-Tibb, Kamil-us-Sanaa, Kitabul Mansoori, Kitab Al-Umda Fil Jarahat and Kulliyate-Nafisi. In addition to the modern concept we went through Modern books, Journals and Research Papers in the databases Pubmed, Embase and other resources.

CONTRIBUTION OF UNANI PHYSICIANS

Alcmaeon of Croton was the first person to observe that arteries (sharayeen) and veins(orida) in his animal dissections appeared dissimilar.[12]

Buqrat (Hippocrates 460-377 BC): According to Hippocretes, 2 ventricle in heart (qalb).[11]

Aristotle (greatest 384-322 BC): Greek biologist and philospher, saw the heart as an organ with three ventricular chambers and illustrated a main artery, which he named of the "Aorta", originating from the heart.[7]

Herophilus (About 300B.C): Herophilus recognize however vaguely the importance of heart as the center of blood system and connection between the heart and the pulse beat; Herophilus, who had earlier confirmed that the arteries had thicked walls than the veins in his human cadaveric dissections, maintained that the atria were parts of the heart, although it was not universally accepted at that time.[20]

Erasistratus (330-250B.C): He rightly saw the heart as a pump and suggested the existence of a very fine communication system between the arteries and veins. He described the auricles of the heart, and a role for the semilunar and tricuspid valve. His theory of the local accumulation of blood as a cause of diseases led him to direct greater attention to the heart, veins, and arteries.[16]

Jalinus (Galen, 129-200 AD): In his book "De Usu Partium" Jalinus wrote: Arteries carried blood instead of air.

According to Jalinus, there were two kinds of blood: Spiritual blood (arterial blood, present in left heart); venous blood (present in right heart.[9] Spiritual blood nourishes light and delicate texture organs. Galen like other physician of his time, knew that the heart had four cavities, but like Erasistratus, he regarded only the ventricles as forming the heart proper and the atria as being a sort of enlargement or bulge of the vessels leading into the ventricles. He believed wrongly that there was communication between the right and left ventricles because of perforation in the septum, the small fossae which appear, especially in the middle of the separation(both ventricle) of the heart.[18]

Zakariya Rāzī (Rhazes, 854-925 AD): said in his book "Kitāb-al-Mansūrī" that heart shape is conical (sanobari) such that its tapering end faces downwards and its base (jad) faces upwards and it is surrounded by thick membrane that encloses the heart.[22]

Ibn Abbās Majūsī(930-994 AD):made the first distinctions between veins and arteries based on their thickness, in addition to a detailed description about the descending aorta of the thoracic structure. Yet, his greatest contribution was making one of the first mentions about a connection between the venous and arterial system, describing it in the following way in the "Royal Book".[17]

There are some foramina within the non-pulsating vessels [veins] that open to the pulsating vessels [arteries).[25]

Ibn Sīnā (Avicenna, 980 -1037AD): explains in his book "Al-Qānūn fi'l-Ṭibb" (The Canon of Medicine) that two venous arteries arise from the left ventricle, one of which reaches the lungs and spread out there in order to draw oxygen and supply blood. The other venous artery caries nutrient to the lungs for the heart, in deed it is the heart which supplies nutrition to the lung, i.e., nutrition comes to the lungs from the heart.[1] Ibn Sīnā was a pioneer in pulsology. In the other words of Ibn Sīnā every beat of the pulse comprises two movements and two pauses. Thus, expansion: pause: contraction:[10]

Ibn Rushd (Averroes, 1126-1198 AD): writes in his book "Kitabu'l Kūlliyat" that heart is placed in chest such that its apex is slightly directed towards left side and large shiryan (arteries) arises from this side18, whose pulsation can be felt on left side. That's why mostly people think that heart is situated on left side.[24]

Ibn Hubal Baghdadi(1121-1213 AD): written in "Kitāb al-Mukhtārāt fit- Ṭibb" that qalb (heart).[17] is surrounded by very strong, hard thickened membrane which protects it and it is not adhere to heart so that heart can perform its function i.e., "Inkibāz wa Inbisāṭ" (contraction and relaxation).[23]

Ibn al-Nafis(1213-1288 AD): He correctly explained how the heart pumps blood, and he did so centuries before the advent of modern medicine. Theory of blood circulation given by Ibn Nafees'' he state that blood from right side of heart to left side of heart not pass by non digestive pores but pass by' Lung' so wall of heart make solid First time.[26]

After many centuries, Willium Harvey (16th century) demonstrates and published the accurate description of human circulatory system.

Ibn Zohr, for the first time in his book mentioned Gilafe waram.[24]

According to Galen, Herophilus was the first to publicly dissect the human body, marking the documented beginning of human dissection.[20]

Number of Heart Chamber

PHYSICIANS	NO OF HEART CHAMBERS		
	Two	Three	Four
Greek Physicians	Buqrat (460-375 BC)		
		Arastu (384-322 BC)	
Alexandrian Physicians			Herophilus (325-255 BC)
	Erasistratus (310-250 BC)		
Roman Physicians	Jalinus (129-216 AD)		
Persian Physicians			Al-Akhawayni (949-982 AD)
	Abu Sahal Masihi (960-1000 AD)		
		Ibn Sina (980-1037 AD)	
		Ibn Hubal Baghdadi (1122-1213)	
	Ibn Rushd (1126-1198)		
Arab Physicians			Ibn Nafis (1213-1288 AD)
		Ibn Quff (1233-1286 AD)	

Table.6.1 Numbers of Heart Chamber Assumed by Greek-O-Arab Physicians

DISCUSSION

Today, our understanding of the waza or shakl of qalb (position and shape of heart) is highly advanced and more accurate due to advanced medical imaging and anatomical studies. We know the heart is located in the hijab munassif al-sadr (mediastinum), with its base beneath the second pasli/adla (rib) and its apex near the fifth fazaa bayn al-adla (intercostal space). Its shape is recognized as a conical hollow muscular organ.[29] The heart's base, which includes the great vessels such as the awrita (aorta), shiryan ri'wi (pulmonary artery), and sharayin ri'wiyya (pulmonary veins), is closer to the posterior chest wall, while the apex of the heart points downward and slightly to the left, resting near the fifth intercostal space.[30] Throughout history, different cultures and periods have held various beliefs about the position and shape of the heart. **Buqrat** noted that the heart is situated within an ovoid hollow space enclosed by the ri'a (lungs)**.** This space corresponds to the mediastinum.[31] **Rhazi** provided insights into the shape and location of the heart. He correctly identified that the conical end is tilted towards the left side of the chest.[32] and that the lungs cover the heart completely.[32] In modern times we know that approximately one-third of its mass is situated to the right of the midline and two third to the left.

CONCLUSION

This exploratory study endeavors to delve into the texts, observations, and theories propounded by Greek-o-Arab scholars. In doing so, we acknowledge the profound debt owed to these early scholars and recognize the long-term relevance of their contributions to contemporary medicine. The initial anatomical insights into the heart were either dispersed, lost, or intentionally destroyed. Human dissection faced restrictions, either disallowed or made challenging due to specific ecclesiastical edicts. During the Hippocratic era, scientists and physicians relied on scientific evidence and analytical thinking. Buqrat's contributions marked the first documented recognition of the heart as a muscle.

REFERENCES

1. Ogle W, editor. Aristotle: on the parts of animals. Kegan Paul, French & Company, 1882; 195, 198.
2. Aristotle. History of Animals. Cresswell R, trans. London: George Bell and Sons, 1897; 20-21, 41, 65.
3. Freemon FR. Galen's ideas on neurological function. Journal of the History of the Neurosciences, Oct. 1, 1994; 3(4): 263-71.66
4. Akmal M, Zulkifle m, Ansari AH. IBN Nafis - A Forgotten Genius in the Discovery of Pulmonary Blood Circulation. Heart Views, Mar. 2010; 11(1): 26-30. PMID: 21042463.
5. Maseehi AS. Kitabul Miat. Edition IST.2008, Markazi council baraye
6. On the natural faculties. No. 71. W. Heinemann, 1916.
7. National Health Portal. The Science of Health and Healing [Internet]; 2015 M.
8. MasihiIbn Al-Quf. ''Kitab-Al umda- fil- jarahat ''IST Urdu Translation By CCRUM, New Delhi., 1986; 118,119ay 07. Available from: http://nhp.gov.in/unani_mty
9. Persaud T.V.N., Loukas M, Tubbs R.S., A History of humen anatomy 2nd edition(2004), charls C Thomas Publisher, L. TD, 20,21,23.
10. Qadeer A, History of mrdicine And Medical Ethics 3rd edition, publication-department of kulliyat faculty of unani medicine, jamia hamdard new delhi, 67,73,86.
11. History of heart(http//web.stanfordedu/class/history)
12. https://synapse.koreamed.org/articles/1071617#:~:text=Alcmaeon%20of%20Croton,Smith02 02010
13. Section of the history of medicine (president –Dr j.D.Rolleston) 15.https://www.hellenicjcardiol.org/archive/full_text/2015/3/2015_3_197.pdf
14. Razi Z.Kitabul Mansuri. 1st edition CCRUM, New Delhi; Seema Offset press, 1991.
15. Majusi., ''Kamil-us-sanaa''Urdu translation by Hakeem ghulam Hussain Kantoori, CCRUM New Delhi, 2010.
16. Lari j. insani tashreeh ul badan. Malegaon, Nasik, Alhuda offset, 2008; 25.
17. Gray's Anatomy. 41th edition. Elsevier, 2016; 1004,1006.
18. Tortora G. Tortoras principles of anatomy and physiology 15th edition. Noida. Shree Maitrey Printech, 2017; 584.
19. Qadeer A, History of mrdicine And Medical Ethics 3rd edition, publication-department of kulliyat faculty of unani medicine, jamia hamdard new delhi, 67,73,86.
20. Rehman S.Z. (2009) ''Tareekh-ilme-Tashreeh''publication-ibn Sina Academy dodhpur Aligarh(202002)
21. Ibn-Hubal Bagdadi''Kitabul mukhtarat fit-tibb''urdu translationCCRUM, Ministory of health and family welfare, govt. of india, New Delhi, Part-1.
22. Rushd I.Kitabul kulliyat. 2nd edition CCRUM, New Delhi; Ali corporation, 1987; 24.
23. https://www.sciencedirect.com/science/article/abs/pii/S0002870301851
24. Katz A M. Knowledge of the Circulation Before William Harvey. Circulation, May 1, 1957; 15(5): 726–734.
25. Natale G, Bocci G, Lenzi P. Looking for the word "angiogenesis" in the history of health sciences: from ancient times to the first decades of the twentieth century. World journal of surgery, Jun. 2017; 41: 1625-34.
26. Gross CG. Brain, vision, memory: Tales in the history of neuroscience. MIT Press, Jul. 26, 1999; 22, 27.
27. Fowler RC. On the Heart of the Hippocratic Corpus: its meaning, context and purpose. Medical History, Jul. 2023; 67(3): 266-83.
28. Chaurasia BD. BD Chaurasia's Human Anatomy: regional and applied dissection and clinical. 5th ed.

Daryaganj New Delhi: CBS Publishers and distributers, 2010; 1: 243-44.
29. Gray's Anatomy. 41th edition. Elsevier; 2016. P-Preface, 41, 968, 997-99.
30. Rhazi Z. Kitabul Mansuri. 1st edition. CCRUM, New Delhi: Seema Offset Press, 1991; 44, 45.