

Anatomy in **medieval Arab** history

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Anatomy was not an independent science, but every medical book began with a description of the human body and its functions. Studying anatomy was essential for every student, (of medicine) because it was questioned in every examination.

Arab and Islamic physicians learnt that the Greek anatomy was deficient and not complete; they began to discover mistakes and failures which they corrected, and added information as well as new discoveries.

I studied three medical books, Urmdat al-islah fi sinaat al-jarrah short Al-Umdah by Ibn al Quff from the 13th century. Ibn al nafis-arab Galen, 13th century. Al kulliat, by Ibn Rushd (averros) 11th century. 1- Islam doesn't prohibit body dissection. 2-Moslem physicians have practiced some dissection. 3- there has been new discoveries that were important to the development of medicine in the following period. 4- the standard of anatomy science was equal to the general standard of science at that time.



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Anatomical knowledge can be found in the old Egyptian papyrus and in Mesopotamia as far as 3000 B.C. but they do not exceed mentioning organs, without any detailed description, the functions of the organs were not clear. Actual dissection was apparently not performed, although Egyptians were successful in the preservation of mummies, people who performed the art were not scientists, just regular temple workers. The great advance in Greek anatomy was done after Alexander the great whom occupied Egypt, Alexandria was then established, which was a Greek Egyptian city where civilization melted together. Hippocrates 300 B.C. dissected the nerve system, the eye and reproductive organs. He wrote the first Greek book on anatomy, then Galen 131-201 A.C. who made a more animal like anatomy. It is difficult to state whether Arabs in the Islamic period performed dissection on human bodies, because of the inherited prohibition of such dissection. But

studying old books that have been written by famous physicians, we notice that there are always indices, it was not always the case, may be a silence was drawn upon. But if we look at the Koran in new light, we find that there is a verse that is to say "we will show them in the horizons, and in themselves, until it is proved for them that is the right". Koran 41/53 Ibn Rushd (averros) saw in the dissection a way to approach God, The first publication on Anatomy was from Yohanna bin Massaweih, who dissected an ape in the garden of the Khalife Al Moatasseem (833-842 A.C.) Several Arab authors wrote about human creation and descriptive anatomical books. In that period the phase of translation had taken place, all available Greek, Roman, Indian and Persian books were translated then studied by Arab and Muslim physicians. Arab physicians accepted Hippocrates and Galen and adopted their theories, which were also adopted by the church that is what made them conform with Islam somehow.

Through practice Arab physicians discovered their own medicine and began to discuss old theories in light of their new acquired knowledge. The first reported criticism was made to Galen from Al-Majusi "The liver was described by Hippocrates and Galen to have five lobes, but Al-majusi said that there were only two or three lobes" (1)

Al Razi (Rhasis) (856-923A.C.) said "The first you do is to ask a student about anatomy, and then the function of organs" (2).

Al Razi differentiated between the laryngeal nerve and the recurrent nerve on the right side. (3) Al Baghdadi criticized Galen who said that the lower jaw (mandible) has two bones and he had also said that he examined several bodies and found only one bone (4). The most popular book in anatomy was written by Ibn Al Nafis (1210-1288) "Commentary on the Anatomy of the Canon of Avenicenna" in which Ibn Al Nafis analyzed the anatomical data in the Canon. In the preface he stressed that he hadn't performed any body dissection but it is obvious why! his observation and detailed description as well as his dis-

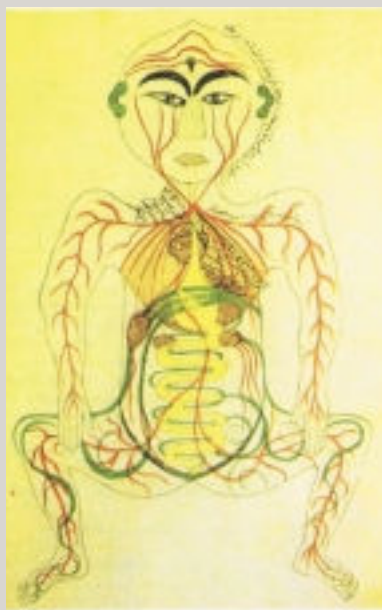
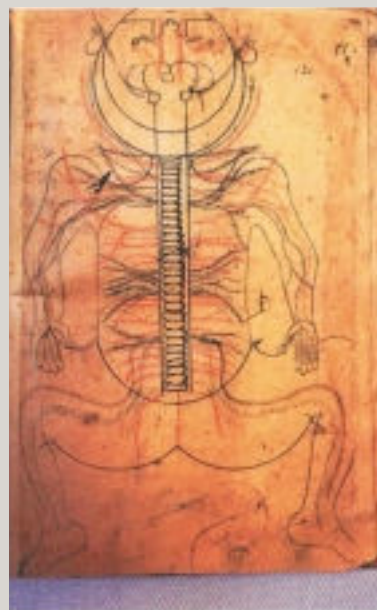
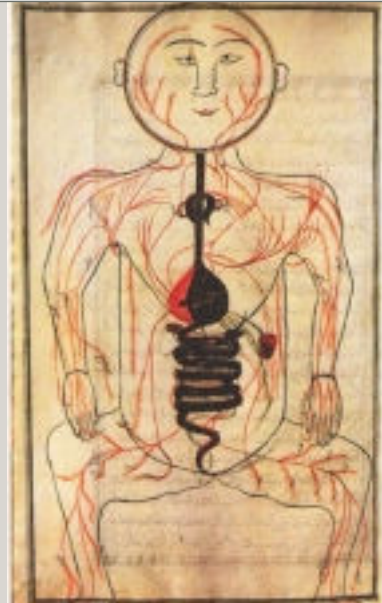


Figure 1 - Diagrams from various treatises on anatomy.

The new discoveries of Ibn Al Nafis were in the blood circulation

coveries had left no doubt that he was not telling the truth, the preface included five points:

- ◆ The difference between the animal and human anatomy. +The basic's of anatomy.
- ◆ The function of organs (Physiology).
- ◆ The principles of complying anatomy and physiology.
- ◆ The essence of anatomy and its instruments, Ibn al Nafis described anatomy as an art and not as science. Art can be acquired through practice but science requires leaning. (5)

He first defended the authority of Galen, and Ibn Sina and stressed that he would be following in their footsteps, so he began almost every paragraph with "Ibn Sina 'said' " then after explaining what Ibn Sina had said he added "and I say that..." And wrote his explanation, The new discoveries of Ibn Al Nafis were in the blood circulation: 1-The Heart receives blood from the coronal arteries for its nourishment and not from some pores from the ventricle itself. 2- Blood runs to the lung to bring air and but not to nourish them, again his (Avenicenna,s) statement that blood on the right side is to nourish the heart is not true at all!, the nourishment of the heart is from the blood that passes through the

vessels that permeate the body of the heart" (6) 3-There is a connection between the arteries and veins of the Lungs(This was attributed to Colombo) 4-There is no air debris in the Lung arteries as by Galen. 5- there is no valve in the right and left ventricles. 6- the walls of the Lung veins are thicker than the arteries (Servetius). Three facts explain why Ibn Al Nafis performed dissection: (A) He has said in different places "and dissection deny that". (B) He says that he saw those different times. (C) He has mentioned about the heart "Ibn Sina says it has three ventricles, thus this not being true, the heart has only two"(7). Ibn al Quff(IQ)(1233-1285)

Ibn al Quff was born in Jordan in the of city Al-Karak, 1233A.C. and studied in Damascus with the famous Ibn A] Nafis. He had written several books, the most popular was "Omdat el Islah fi sina'at al Jarrah" which was the first book that he had dedicated to surgery per ce.

Not like any other Arabic medical book IQ gave anatomy the greatest percentage to his book (31%). (Ibn sina in Canon only received 3%, and Ibn Rushd in al kulliyat received 6%). He used all the information available to him at his time, and discussed them with Aristotle. Galen was cited 27 times, Ibn sina and almajussi once, Aristotle and Asclides twice, he stated 4 times that the dissec-

IR was an admirer of Aristotle and was a philosopher, he concentrated on logic as well as reasoning

tion proved that there are four main organs generated from Humors which is: Blood, phlegm, yellow and black Humors.

Then he goes on to describe the Organs, starting with the skull, to each organ with his description and constitution which is not that far from our modern knowledge, applying the humors theory and explaining the reason for such Organs. This Emphasis on Anatomy shows the importance of the subject for Surgeons to whom the book is dedicated and we only meant to mention the natural issues of the Humors and the Organs in this book, so that the student of this handwork knows it if God will. (8)

In his 12th. Chapter about arteries; he described the structure of the arteries and mentions the Ascliaos theory, Aristotle and also Galen he went on to say that they are wrong, and that dissection

proved that the walls of the arteries are thicker than the veins (9).

IQ is an admirer of Galen so he also agreed that the heart has 3 ventricles, although he had partaken in observations of the arteries and veins, how are we to know whether he did not dissect the heart?, he also describes the heart valves and its function, as well as the coronary arteries (10). Although he lived after Ibn Ainafis, he didn't mention the last work on anatomy.

His anatomical description was in general based on Galen "that we depend on anatomy in his words" d 1).

Ibn Rushd(IR) (1126-1198):

In his 450 pages Alkulliyat (colliget) only 6% was written on anatomy, he defines anatomy as a practical part of medicine, which is the profession of anatomy." That was about to disappear in our time" (12).

The heart has 2 ventricles (after Aristotle), but there are pores between the ventricles. He mentioned heart valves and its function. IR was an admirer of Aristotle and was a philosopher, he concentrated in logic as well as reasoning. He had taken Aristotle and Galen for granted, though sometimes he disagreed with them especially when he used the words " by sense " which means by prac-

tice and observation: In contrary to Galen he noticed that respiration is an involuntary act (13); The arterial blood carry nutrients to the body (14); although he postulated that "anatomical section brings you nearer to God" (15) but his mistakes in compliance with Galen "e.g. the mandible is constituted of 2 bones", tells us that he at least didn't section enough bodies.

Now can we say that there was an Arab anatomy? I-The general Attitude is still negative to anatomy. Although Islam could be interpreted positively, but the dominance of Greek medicine which devaluate every work with the hands as law did not encourage them to go further. This phase lasted until the end of the 10th, Century.

2-By the beginning of the 11th Century, Some physicians practiced anatomy in closed circles like Ibn al nafis , al Baghdadadi, Ibn rushd. Joule lam said" Arab physicians in the 10th century era dissecting cadavers in special halls at the university of Cecily"(16) 3- The acquired information was not shared in general, due to limited contacts, and general negative attitudes.

4- The Greek anatomy was still dominant, although there was some kind of criticism made, which was on the basis of visual contact with cadavers.

REFERENCES

1. Dr.Mohamed Karim Malaysia The effect of Islamic medicine in anatomy, internet
2. M.K.Hasanein The summery in the history of Arab medicine Arab league page25.
3. Dr. Ali a. Al Daffaa, The contribution of Arabs and Moslems in pharmacy. P.188
4. Islamic medicine, Kuwait 1981 Dr. Munsifal Mazrai.
5. Ibn al nafis "arab galen. Dr. rehab akkawi . Dar elfikr:Beirut 1996 p. 76
6. The discovery of the pulmonary circulation revisited, AymanO. Soubany;MD;Farouque A.Khan ,MBfi-om Haddad TE Kheirallah AA. A. an Surg 1936;104;1-S
7. Dr. Paul Galyonji, Ibn al nafis and Dr. Maher A.Q. Ali. Beirut 1988.
8. Alunda, Ibn Al Quff, P.37Dr. Sami.Kh.Hamarneh. Amman Jordan 1994, University of Jordan Publication
9. AlUrnda ,Ibn Al Quff Hader abad I", edition p.48-49.
10. AIUmdap.107-108
11. AIUmdap.85
11. AIUmdap.85
12. Ibn Rushd Al kulliyat fi al tib Dr. M.Abed Aljaberi center for arab unity studiesBeirut 1999p.130 13)IRp. 206.
13. IRp. 138
15. Dr. Ali A. Aldaffaa pure sciences in Arabic and Islamic Civilization p.93,
16. Dr. izzat Mdeiren ,the magazine of science nov.1961, from the compendium of what Arabs added in medicine and affiliated branches, Dr. Mahmud haj kassern Mohamed. Bagdad 1974 p.23.