

Over the Centuries, Scientists have Pieced Together the Anatomy of the Heart

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Abstract

It has taken centuries to piece together the gross anatomy of the heart. From Hippocrates to Galen to Leonardo da Vinci, great anatomists, philosophers, and even artists have all contributed to unravelling the mystery that was once the heart's structure. Ancient minds fought against religious and cultural constraints to provide us with the foundation for our sciences, particularly medicine. Despite advances in understanding the anatomy of the heart, recent anatomists have made new discoveries. This manuscript examines the evolution of cardiac anatomy from its inception to its current state of refinement.

Keywords: Zph • Fungi • Zoophagus • Tetraceros

Introduction

There was no agreement on the vascular system in Herophilus. "On Fleshes," a notable Hippocratic treatise, recognises the heart as the central source of blood vessels, with all vessels culminating in two vessels: "the artery and hollow vein," both of which originated from the heart. Another Hippocratic treatise, on the other hand, considers the head to be the origin of the vessels. Alcmaeon (a preSocratic physician and philosopher) was another notable physician of the fifth century; he is regarded as the first to perform animal dissections, though this is still debated. He is also credited with being the first to recognise the difference between arteries and veins without regard for anatomical differences.

Empedocles, a physician, philosopher, and poet, influenced cardiovascular system concepts during this time period. Empedocles was the first to notice that the heart developed before any other organ. According to Mavrodi and Paraskevas, in the heart versus head debate, Empedocles disagreed with Alcmaeon because he believed the heart was the centre of the cardiovascular system and the origin of the soul and mind. Empedocles theorised that blood was used to distribute "pneuma" to the whole body, a theory which would come to be known as "pneumatism". The spirit of life, or pneuma, is said to mobilise the organism.

Hippocrates, Syennesis of Cyprus, attempted to provide the first anatomical description of the vessels a few years later. However, Syennesis believed that the vessels originated from the umbilicus rather than the heart. With Plato's description in the Timaeus, the central role of the heart finally gained traction. According to the above-mentioned book, the heart is a "knot of veins and a source of the blood that races through the limbs." However, it was not until Diocles of Carystus that the heart as the centre and origin of the blood vessels was described in detail. Diocles of Carystus was known as "the younger Hippocrates," and he is credited with being the first person to use animal dissections to write an anatomical textbook [1].

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Description

While Herophilus made important advances in anatomy, Erasistratus concentrated on heart physiology. He is credited with recognising that the heart's structure is well suited to its function as a pump. Furthermore, of all the valves, Erasistratus was the first to describe them. He named the valves of the arterial vein (the pulmonary artery) and aorta "sigmoid" because of their shapes. According to Paraskevas, Koutsouflianiotis, and Iliou, Galen is the one who named the arterial valves "semilunar or sigmoid (cusps)." Erasistratus classified atrioventricular valves based on the number of cusps. More importantly, he is regarded as the first to accurately interpret the functions of the valves as unidirectional gates.

The circulatory system was first described by Erasistratus, who recognised the heart as the origin of all vessels, with the end of the veins representing the anatomical beginning of the arteries. He also stated that veins drained into the right ventricle and arteries drained into the left ventricle. Furthermore, Erasistratus described the circulation of blood from the liver to the heart via the inferior vena cava and from the heart to the lungs via the arterial vein. Despite his advances in understanding the anatomical structure of the circulatory system, he incorrectly adhered to the "pneumatic" theory. As a result, he advanced the theory that the arteries carried air and coined the term "pneumatic" for the left ventricle. He also misinterpreted Herophilus' recognition of the "atria" as anatomical components of the heart and held onto the previous arterial dilation theory [2].

Religious authorities stifled academia and inquiry during this time period. As a result, physicians relied on the work of ancient Greek philosophers and doctors. Because anatomical dissection was illegal, the description provided by Galen was assumed to be complete and accurate. While Christians in the West condemned "sensible knowledge" as flawed, Arabs in the East organised and translated the works of ancient Greats such as Galen and Hippocrates from Greek to Arabic. As a result, the 9th to 12th centuries are known as the "Golden Age of Islam." Haly Abbas, Avicenna, and IbnAl-Nafis were notable Arabian physicians. Haly Abbas, a prominent physician to the King of Persia in the 10th century A.D., made his most significant contribution to anatomy during this time period [3].

Despite this ruling in the 13th century, no statutory regulations for the delivery of bodies were put in place until 1387. In 1387, the University of Florence requested the bodies of three incarcerated, alien criminals for dissection each year. Nonetheless, the decree was sufficient to allow the contentious "Restorer of Anatomy," Mondino de Luzzi, to live and work. Consider a professor reading Galen's book aloud while leading a public dissection performed by a demonstrator. This was the setting for one of

Mondino's "anatomy classes," making him the first person to perform public dissections since Herophilus and Erasistratus in the third century B.C [4,5].

Conclusion

The anatomy of the heart has been a slow and steady journey travelled by intellects from various backgrounds who have remained painstakingly committed to their pursuit of the "truth" despite various challenges. We acknowledge that a complete history of the anatomy of the heart is elusive due to works that have been lost, either intentionally or unintentionally. Nonetheless, reflecting on this point is beneficial because it reminds us that not every "doctrine" represents truth.

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Conflict of Interest

There are no conflicts of interest by author.

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