REVIEW / *Derleme*

Development of the Anatomy Theaters in Netherlands During the 1600s and Contributions of Some Important Names

1600'lü Yıllarda Hollanda'da Anatomi Tiyatrolarının Gelişimi ve Bazı Önemli İsimlerin Katkıları

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Abstract

Creating a common historical perspective on anatomy is necessary for humanity to complete its mental and philosophical development. Since the 1600s, the Netherlands has made great contributions to the historical development of the science of anatomy. In addition to the medical conditions encountered in daily life, the science of surgery, which developed thanks to the wars, has glorified the science of anatomy over time. In the 1600s, anatomy theaters in the Netherlands were established under the leadership of surgeons and supported by the administrators. The scientific environment they created made the Netherlands one of the important medical education centers in Europe, like Italy and France. This success can be explained by the fact that the Dutch people placed scientific methods in the new universities they established in parallel with the economic, political, cultural and mental development of the Dutch people. Thus the Netherlands of the 1600s almost created a historical step between today's and medieval faculties. This period of the Netherlands, which, with its progressive climate, created science and art producers who have shaped the world's anatomy and medical education today, should be remembered with its important names and contributions.

Keywords Anatomy theater, Netherlands, Leiden, cadavers, human dissection

Öz

Anatomiye ait tarihsel bir ortak bakış açısı oluşturmak insanlığın zihinsel ve felsefi gelişimlerini tamamlamalarında gereklidir. Tüm medeniyetlerin az çok katkılarıyla asırlar boyu üretilmiş ve günümüze aktarılmış olan anatomi biliminin tarihsel gelişiminde 1600'lü yıllardan itibaren Hollanda büyük katkılara sahiptir. Günlük hayatta karşılaşılan tıbbi durumların yanında savaşlar sayesinde de gelişen cerrahi bilimi zamanla anatomi bilimini yüceltmiştir. 1600'lü yıllarda Hollanda'daki anatomi tiyatroları cerrahların öncülüğünde kurulmuş, yöneticiler tarafından desteklenmiştir. Oluşturdukları bilimsel ortam zaman içinde Hollanda'yı da İtalya ve Fransa gibi Avrupa'da önemli tıp eğitimi merkezlerinden yapmıştır. Bu başarı Hollanda halkının maddi, siyasi, kültürel ve zihinsel yönlerden gelişmesi ile paralel olarak bilimsel yöntemleri kurdukları yeni üniversitelere yerleştirmesiyle açıklanabilir. 1600'lü yılların Hollanda'sı adeta günümüzdekiler ile ortaçağ fakülteleri arasında tarihsel bir basamak yaratmıştır. İlerleyici olan bu iklimiyle Dünya'nın bugünkü anatomi ve tıp eğitimine yön vermiş bilim ve sanat üreticilerini ortaya çıkartan Hollanda'nın bu dönemi önemli isimler ve katkılarıyla hatırlanmalıdır.

Anahtar Kelimöeler *Anatomi tiyatroları, Hollanda, Leiden, kadavra, insan diseksiyonu*

INTRODUCTION

The production of anatomical knowledge used in medicine today has gone through a very long and arduous process. In order to maintain the traditions of the scientific environment that can create these processes, the historical contributions to those must always be remembered with their people and environments. As examples of such environments, we aimed to summarize the contributions of Dutch society in the 1600s to anatomy in this review.

The intellectual rise of the Netherlands in the 1600s

In the seventeenth century, the Netherlands rose to be a great power. This rise, which led to an important intellectual rise, led to a historical period in which individuals who made outstanding efforts in science emerged. In this period, when the Netherlands was financially and intellectually liberated, France and Germany were struggling with the Fronde and the Thirty Years' War, respectively. French sovereignty was replaced by the new Dutch Republic.[1] This increase in the social intellectuality of the Netherlands in the 1600s can be explained by the transformations this country went through in the political, economic, religious, social and cultural platforms in the 1500s. The Dutch War of independence began in 1564 when the entire Netherlands rebelled against Spanish rule. In about the first years of this war, Leiden University and the medical school in it emerged.[2]

In the wealthy cities of Europe, medical education was considered crucial to sustaining the city's development in all ways. Spreading the knowledge that a city provides a quality medical education all over Europe attracted more students to its city, thus stimulating the economy. The Netherlands did not want to be left behind in such a competition, and at the same time as Italy and Spain, the Netherlands tried to develop anatomy theaters, which are a very important element in medical education. Beginning in the 1600s, the Netherlands produced important medical professionals who sparked intellectually in Europe.

Contributions to anatomical knowledge have always played a key role in the development of medicine. Staying devoted to its tradition since its establishment, Leiden's policy has always been progressive. It did not lag behind other advanced regions of its age, and it also initiated new developments that would affect these regions.[3]

In the 1600s, Leiden was a serious rival scientifically even to Paris and Padua. It practiced the broadest religious tolerance as a place of learning. The University which was provided by a generous donation from the state established five faculties, including law and medicine. At that time, Leiden questioned medieval traditions, changed the concepts of teaching and research and developed behaviours that were more compatible with modern practices, which increased the success of its scientists. In 1614 it was modest in size, with four faculties, a library, an anatomical theater, and classrooms. The library in 1610 contained less than 1000 chain books, with theology and law predominant and history, literature, philosophy, medicine, and mathematics less represented.

The early medical courses and the influence of leading surgeons in the Netherlands

The first medical course in the Netherlands was given by Petrus Forestus at the opening of the university in Leiden in 1575. Padua and Paris, which had classical Galen-style teaching, were among the best medical schools of that time. Bontius (1536-1599), the first professor of medicine who received his diploma in Leiden, continued the Paduan anatomical tradition in Leiden. Bontius, who lectured in anatomy, botany and medicine, also focused on some studies of Hippocrates and Fernel's physiology.[2]

Surgeons' guilds had a primary influence on the establishment of anatomy theaters in the Netherlands. The Surgeon's Guild was founded in Amsterdam in 1552.[4] Desiring to perform annual anatomical dissections in Amsterdam, the Society of Surgeons (on 13 March 1555) prepared a petition to Philip II, King of Spain and the Netherlands,

for permission. In this period, when the political and economic power of the surgical guilds was high, the Church and administrators also supported the establishment of anatomy theaters. The fact that Amsterdam prelectors such as Sebastiaen Egbertsz de Vrij or Nicolaes Tulp, who were members of this guild, were promoted to mayor indicates their political acceptance.[5-7]

The anatomy theater of the Amsterdam surgeons' Guild is described as follows: This theater is similar to ancient Roman theaters. 6-floor seating is available. In the centre of the theater is a rotating anatomy table. It is told that human and animal skeletons were exhibited in the Amsterdam anatomy theater and there was a rich cabinet of anatomy instruments. Also, the anatomy theater at De Waag in Amsterdam was a part of the surgeons' guild until the 1820s.[8] Bontius's work at the growing university was reduced in 1592 when his student surgeon Pieter Paaw (1564-1617) was appointed professor of medicine. In 1593, Pieter Paaw succeeded in establishing an anatomical theater in Leiden, which created one of the most famous collections and libraries in Europe. That theater also taught the concept of "Nosce te Ipsum / know yourself".[2]

Pieter Pauw studied medicine in Leiden between 1581-84. Then he went to Paris then Padua, where Vesalius had once lectured, to study anatomy. Pauw probably conducted the first public anatomy lecture on the human body in Leiden in December 1589 and has performed nearly 60 human and numerous animal dissections in 19 years.[8,9]

The anatomical theater Professor Pieter Pauw built in Leiden (1593) had six galleries with a capacity of over 200 spectators. The theater founded by the University of Leiden in 1596 was called Theatrum Anatomicum. Thus, Leiden University became one of the universities in Europe with a permanent anatomy theater after the University of Padua.[2,8] The architecture of the theater was like the Paduan model of 9 m in diameter. The two lower galleries were larger than the upper galleries (45 cm wide). In the centre is a rotating table.[2]

The engraving of the famous old anatomy theater in Leiden has been engraved several times. There were five towering concentric platforms for students, and no seats were provided in these theaters. There was an oval table for the cadaver. The theater was also used as a museum. Here were found early dissecting tools, such as those depicted in Vesalius's "Fabrica", human skeletons, etc.[3]

The monastery of Saint Ursula was the first place where the anatomy lesson with cadavers was held in Amsterdam. This event took place in 1550 with the participation of the city's people under the leadership of the surgeons' guild.[10] Anatomical studies have accelerated in the Netherlands since the 17th century.[4]

The 1600s was a time when the importance of anatomy and applied surgical training in medical universities was better understood. These activities, which explored the human anatomy, were open to the public but were not free of charge. Furthermore, a well-known painting of Rembrandt representing a dissection conducted by leading surgeon Dr Nicolaes Tulp (figure 1), came from past to the present under the name of 'Anatomy Lecture'.[11,12]

Figure 1: The Anatomy Lesson of Dr Nicolaes Tulp

Nicolaes Tulp The transition to the modern anatomy style in Amsterdam is mainly attributed to a surgeon named Nicolaes Tulp (1593-1674). Dr Tulp was a student of one of Vesalius' students, Peter Paauw, and was known in the Netherlands as "Vesalius of Amsterdam".[13] Dr Tulp studied medicine at the University of Leiden. He served as Praelector of the Amsterdam Society of Surgeons (1628 –1653). Beyond his profession, he has been both a member of the city council and mayor of Amsterdam.[6] Tulp wrote a book called Pharmacopoea Amstelredamensis because many people in Amsterdam died helplessly from the plague epidemic and improperly prepared drugs. The book Observationes Medicae, written also by Tulp, is a success for medical education in that it examines the conditions, treatments, or causes of death with descriptions of 231 patients. In addition, among the medical information he mentioned, there are some types of cancer, some lung diseases, heart clots, palpitations, head injuries etc. He accurately described the ileocecal valve first.[6,14]

In Delft, a city in the Netherlands, a library, laboratory, botanical garden and zoo were also established in the place where the anatomy theater is located.[8] There was a library belonging to the anatomy theaters, and medical books and illustrations of the time were found in these libraries. These libraries were used by medical researchers and students. These campuses, with their anatomy theaters, libraries and private collections, acted as education centres in every respect. Not only scientists and students but also writers, poets, painters and sculptors came to the anatomy theaters. Thus they became cultural/art centres as well as education centres.[3] The artists wanted to learn about the internal structure of the human body and how it works.[15] The best place to learn this, of course, was the anatomy theaters.

Hospitals of the Netherlands, which have existed since the twelfth century, were used simultaneously as nursing homes and orphanages. Surgeons were dependent on the doctors who oversaw these hospitals.[11] Instead of the surgical guilds that began to disintegrate in the early 1800s, the municipal government in Amsterdam established a Medical Supervision Committee called the Collegium Chirurgicum. Over time, barbering and surgery were separated from each other.[11] Clinical schools for surgical training for surgeons were established in several cities of the Netherlands. Urban surgeons and provincial surgeons took four years to train. The clinical schools attached to the hospitals were financed by the municipalities. In 1865, the Dutch government ended surgical training outside universities. However, specialization in surgery was not structured. Candidates were working as assistants in a hospital in the Netherlands or abroad for as long as they wished. Until 1931, all physicians had the right to operate.[11]

Leiden's contributions to anatomy during the anatomical theater period

As a result of the intellectual climate that influenced its founding in 1575, Leiden University was given a motto reflecting Leiden's tolerance for different spiritual backgrounds and political notions. "Praesidium Libertatis", "Fortress of Freedom". The curators had formed a moderate and libertarian stance that was ferociously opposed to orthodoxy, including Protestantism. They allowed philosophers such as Spinoza and Descartes to develop their ideas and to create an atmosphere that allowed members of all religions to mix freely.[2,16]

To increase the supply of cadavers, on 18 December 1593, the University of Leiden was granted the authority to take the bodies of executed criminals throughout the Netherlands. The fact that other cities of the Netherlands also built anatomy theaters shows that the cities of the prosperous Netherlands were competing with each other and that the rulers of the time in the 17th century gave importance to the medical school, which was correlated with anatomy education and economic development.[17]

Leiden University, the only university in the State of Holland, was one of the universities mentioned in Europe

of that period by hosting the anatomy theater, botanical garden, museum and library together. Anatomy theater activities held in such an environment attracted many European people interested in the subject to Leiden. The Elzevir family, who established a printing house in Leiden, produced their first books in 1583 and in time became printers for the university. In this respect, Leiden has also become an important academic publication center.[3]

In the 17th century in the Netherlands, a group of physicians and scientists came together under the name Collegium Privatum Amstelodamense to deal with organ structures and functions. Thus, the anatomy and physiology disciplines progressed more easily thanks to this gathering of scientists.[6]

CONCLUSION

The historical narrative of environments such as Holland, which contributed to the budding of the science of anatomy, should be kept in mind in order to maintain the traditions of the scientific environment. Performing anatomical dissections with fresh cadavers was done in winter because formaldehyde was not known at that time. Technological developments, which have enabled the body to be examined in vivo, have left no need for dissection except for medical education and autopsy. Therefore, the encounter of the public with the body which is researched for learning and teaching is made possible by the possibilities of digital technology.

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