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A LIFE DEDICATED TO MEDICINE

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The article discusses the work of the founder of modern anatomy Andreas Vesalius (1514-1564) on the culmination of his scientific and pedagogical activity - the work "De humani corporis fabrica", the historical conditions in which this book was written, and the difficulties created by the classical anatomy of Galen. It is noted that the work of Vesalius played an important role not only in the development of anatomy and medicine but in general in the formation and development of universal human innovative ideas. Unlike his predecessors, Vesalius preferred the method of dissection in anatomy; the study of anatomy on human cadavers, often contrary to the laws of that time, the explanation of the details of the subject precisely on cadaveric material, of course, could not fail to bear fruit. Along with this, it is noted that Vesalius was a skilled physician and surgeon of his time. Putting forward the functional factor in the study of organs, Vesalius achieved more voluminous and versatile scientific details. Throughout his career, Vesalius fought against the negative manifestation of Galen's ideas, which turned into medical dogma and achieved a detailed correction of about 200 Galen's mistakes. Of course, this was not positively received from the conservative-reactionary and very influential scientific circles, scientific and pedagogical activities, as well as the very existence of Vesalius simply as a person, was attacked. As a person who dedicated his life entirely to medicine and anatomy, Vesalius eventually fell victim to these conservative forces. Analysis of modern literary data on the main work of Vesalius shows that his scientific and pedagogical legacy still needs to be studied and discussed.

Keywords: Andreas Vesalius, anatomy, Galen, dissection, teaching anatomy, cadaveric preparations.

TƏBABƏTƏ HƏSR OLUNMUŞ ÖMÜR

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Məqalədə müasir anatomiyanın banisi Andreas Vezalinin (1514-1564) elmi və pedaqoji fəaliyyətinin kulminasiyası olan "De humani corporis fabrica" əsərinin yazılması, bu əsərin yarandığı tarixi şərait və klassik Qalen anatomiyasının törətdiyi çətinliklər təhlil olunmuşdur. Qeyd edilmişdir ki, Vezalinin əsəri təkcə anatomiyanın və təbabətin deyil, ümumən mütərəqqi bəşəri ideyaların yaranması və inkişafında çox mühüm rol oynamışdır. Öz sələflərindən fərqli olaraq Vezalinin anatomiyanın təşrih metoduna üstünlük verməsi, dövrün və o zamankı qanunların çox zaman əksinə olaraq insan meyitləri üzərində anatomiaynın öyrənilməsi və tələbələrə bu fənnin incəliklərinin məhz meyitlər üzərində izah edilməsi, təbii ki, öz bəhrəsini verməyə bilməzdi. Bununla yanaşı, Vezalinin yaşadığı dövrün mahir

həkim və cərrahı olması vurğulanmışdır. Vezali orqanların öyrənilməsində funksional amili önə çəkməklə daha dolğun və hərtərəfli elmi dəlillərin əldə edilməsinə nail olmuşdur. Öz fəaliyyəti boyu Andreas Vezali tibbi doqmaya çevrilmiş Qalen ideyalarının mənfi təzahürləri ilə mübarizə aparmış, detallı surətdə Qalenin 200-ə qədər səhvinin islahına nail ola bilmişdir. Əlbəttə ki, bu, mühafizəkar və çox nüfuzlu elmi dairələr tərəfindən yaxşı qarşılanmamışdır, Vezalinin elmi-pedaqoji fəaliyyəti, eləcə də sadəcə bir insan kimi yaşayışı böyük ziyanlar görmüşdür. Həyatını tamamilə tibbə və anatomiyaya həsr etmiş bir şəxsiyyət olaraq Vezali sonda bu mühafizəkar qüvvələrin qurbanı olmuşdur. Vezalinin əsas əsərinə aid olan müasir ədəbiyyat materiallarının təhlili göstərir ki, onun elmi və pedaqoji irsi hələ də öyrənilməli və müzakirə olunmalıdır.

Açar sözlər: Andreas Vezali, anatomiya, Qalen, təşrih, anatomiya tədrisi, meyit preparatları.

The Anatomist Day, which has been celebrated since 2019, is worldwide recognition of the dedicated work of all anatomists who have served the development of medicine for centuries. Of course, this day is associated with the name of Andreas Vesalius, the founder of modern anatomy. Vesalius' work marks a fundamental turning point in the development of medicine, as well as in the evolution of scientific practice in general. It is also one of the most important moments in the creation of the intellectual heritage of humanity [1,2]. Vesalius' masterpiece, "De humani corporis fabrica" or simply "Fabrica" (1543, 1555), was naturally an anatomical text, but Vesalius included textual and figurative references to his use of vivisection to explain the function of certain structures [3]. Unique was the techniques that Vesalius used to conduct public autopsies in the early sixteenth century; to overcome the limitations of public anatomical demonstration

Andreas Vesalius (1514-1564)

noted by his predecessors, he employed several innovative strategies, including the use of animals as dissection objects, the preparation, and display of articulated skeletons, and the use of printed and hand-drawn images, and drawn illustrations. Learning these strategies for solving the problems of the public anatomical display will help us rethink Vesalius' contributions to sixteenth-century anatomy [4,5,6,7]. In his work "De Humani corporis fabrica" Vesalius criticized both the medieval method of preparation and the dependence of anatomy on authoritative texts. According to Vesalius, an anatomy teacher should be able to independently dissect a corpse and trust their eyes more than an authoritative text. Relying on his own eyes, Vesalius gradually began to doubt the truth of various anatomical statements contained in Galen's anatomical treatises. Galen (c. 130-200) was the greatest medical authority in the Renaissance and was considered almost infallible. In the personality of Galen, the idealism of the humanism of the Renaissance reached its highest point, according to which medical truth relied exclusively on ancient, especially Greek, heritage. Andreas Vesalius disrupted the established rigid and fabricated way of teaching anatomy and presented a modern teaching concept based on personal observation, using illustrations combined with a critical spirit and a sense of experiment [8].

The De Humani Corporis Fabrica (1543), created by the Belgian anatomist Andreas Vesalius, represents one of the most advanced surgical revolutions in history [6]. The creation of a book on anatomy that carefully and systematically presented the structure of the human body by the findings of a human autopsy had never been done before. No one challenged Galen's teachings the way Vesalius did. De Humani Corporis Fabrica offered the surgeon new knowledge and a systematic approach to human anatomy. The revolutionary renewal of knowledge about the anatomical structure of humans slowly and progressively moved into the topographic and physiological understanding of surgical diseases. At the same time, it made more targeted and safer operations possible. In addition to the importance of this anatomical publication, Andreas Vesalius also gained recognition as a surgeon [9].

It can be argued that Vesalius's comparative approach to dissection, using both human and animal specimens, versus Galen's textual description, paved the way for cumulative observations with greater detail, which in turn required the representational skills of artists. Analysis of Vesalius's views between 1538 and 1543 shows that thanks to the great master, there was a transition from the use of illustrations as a visual record to compensate for the limited access to corpses during training to the transformation of the latter into an indispensable tool for accurately conveying detailed anatomical structure through printing [10]. Until the 19th century, the Aristotelian concept of the scala naturae (stairs of nature) was the most widely accepted biological theory among Western scientists. This theory had dictated that only humans have an intelligent soul that made it possible to reason and reflect. Michel Eyquem de Montaigne (1533-1592) was the first philosopher influential enough to firmly assert that animals are cognitive beings. His views sparked fierce controversy, led by René Descartes (1596-1650). It was only after it became clear that both animals and humans have cognitive abilities that it became possible in the 20th century to explore the effects of conscious awareness and intention on animal behavior. The anatomist Andreas Vesalius has already rejected the Aristotelian view of the absence of a rational soul in animals in his 1543 opus magnum De Humani Corporis Fabrica Libri Septem. His observation, “that there is a difference in size depending on the

amount of intelligence they seem to possess: the largest human brain, followed by the brain of a monkey, a dog, and so on, which corresponds to the amount of intelligent force that we output. This statement was echoed about 330 years later when Darwin concluded that "the difference in intelligence between man and higher animals, however great it may be, is certainly a difference of degree, not species" [11]. Vesalius was the first to publicly document the concept of voice production as an integrated and central nervous system controlled function of respiration, phonation, resonance, and articulation. He did it almost 500 years ago; thus, the founder of modern anatomy [12] laid a solid foundation for understanding the physiology of the formation of sound and speech and their control in the form in which we know it today [13]. The historical evolution of understanding the mechanical aspects of respiration is not well documented. The fact that the anatomist Vesalius (1514-1564) was the first to describe many of these aspects in the De Humani Corporis Fabrica Libri Septem has received little attention. An analysis of the English translation of Vesalius's greatest work, provided by Richardson and Carman (1998-2009) for references to aspects of pulmonary ventilation, showed that Vesalius understood the basics of forced breathing. He realized that atmospheric pressure transports air to the lungs about 100 years before Borelli. He described an in vivo breathing experiment about 120 years before John Mayow created his artificial model. He reported positive pressure ventilation via tracheostomy and its life-saving effect about 100 years before Robert Hook did it. By publicly writing down his discoveries over 450 years ago, Vesalius laid a solid foundation for our understanding of the physiology of breathing and the treatment of breathing disorders [14]. Vesalius was the most skillful physician of his time. He was also interested in the pathological aspects of anatomy. He recalled in his last book Anatomicarum Gabrielis Fallopii Observationum Examen (1564) some cardiological interesting patients, including the courtier van Immerseel with a very irregular pulse and a "sad and painful heart" (tristi in corde, sensu doloreve), in whom posthumously a cardiac deviation was discovered that in modern terms we might call "old heart attack with thrombus formation." According to Schenk von Grafenberg, Vesalius dreamed of a big book on anatomical pathology, but, alas, he never wrote it. Undoubtedly, he would trust his eyes more, and not Galen: “non solum ex Galenis testimonio, sed etiam oculis ipsis perspexeris” [15]. He taught surgery for many years in Padua. He was appointed court physician and surgeon at the Habsburg court of Charles V and Philip II. He carried out many operations, known at the time as major. He not only quickly adopted the surgical innovations of his fellow surgeon Ambroise Paré, but even performed surgeries that had been forgotten for several centuries, including thoracocentesis for pleural empyema. His clinical acumen in finding indications for certain operations was overwhelming and prized by all the great monarchs of 16th century Europe. In his several councils, numerous advice were given on the treatment of surgical patients [9]. Vesalius' main advantage was his passion for working with cadaveric material. Thanks to the skillful dissections and analysis of what he saw, his work gradually replaced the "classical ideas" of Galen. It was after the autopsy of human cadavers that Vesalius noticed that Galen made several mistakes since his autopsy was carried out on animals, especially monkeys [7, 16]. Andreas Vesalius had dozens of bodies at his disposal, thirteen of which were dated to the period before 1543. They came from cemeteries, execution sites, hospitals [17].

Yes, the work of Vesalius was a

success, one might say, even instant; however, it also generated envy and attacks. Vesalius did not hesitate to point out Galen's mistakes (about 200). Naturally, this could not satisfy everyone. Vesalius had enemies and very influential ones. Even his teacher Sylvius opposed Vesalius. Sylvius ridiculed Vesalius with a Latin pun, writing "the slander of a madman - Vaesani cuiusdam calumniarum" [18]. A very remarkable fact: in the first edition of his book, Vesalius still doubted the presence of a connection between the right and left ventricles of the heart. In the second edition, he openly and confidently states that there is no connection between the right and left ventricles, which, of course, contradicted the foundations of the then anatomy and the all-powerful professors of anatomy. Vesalius brought something new not only to anatomy, but also to physiology, for he was always interested not only in structure but also in function. Of course, describing the important scientific achievements of Vesalius, one cannot fail to note the positive environment, which, to some extent, was represented by the University of Padua. In his very first work, Tabulae anatomicae sex (1538) Vesalius highlighted Galen's anatomical errors. This book has been illustrated by Jan van Calcar. He, presumably, was the author of the illustrations and the De Humani Corporis Fabrica Libri Septem [19]. Vesalius' fame as a clinician was quite large. He was invited to medical consultations for prominent European persons, including the French king Henry II, who was mortally wounded during a tournament in Paris in 1559. Despite all the obstacles, Vesalius made corrections in the text of his book and published its second edition in 1555 - in the year of Sylvius' death. This volume was much larger than the previous one; each page contained 49 lines instead of 57 [20]. After the publication of the Fabrica, Andreas Vesalius entered the Spanish court and became court physician to Charles V, Holy Roman Emperor, and then to Philip II, King of Spain [19,20,21]. Quite interesting is a recent find: Vesalius's copy of the 1555 edition, carefully annotated in preparation for the unpublished third edition. Vesalius made hundreds of changes to the second edition, the vast majority of which were stylistic, changing Latin words but not the general meaning [22].

Vesalius' whole life, full of hopes and victories, bitter disappointments, and even persecutions, was completely devoted to medicine, serving people and the foundation of medicine - anatomy. The slander against him, which later became the reason for the punishment in the form of a pilgrimage, turned out to be fatal. The world lost Vesalius at the top of his powers. Day of the anatomist, which for the second year has been celebrating at the international level, is primarily a tribute to the memory of the great scientist, teacher, and anatomist Andreas Vesalius.

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ÜRƏYİN SOL MƏDƏCİYİNİN SİSTOLİK FUNKSİYASININ SAXLANMASI İLƏ GEDƏN XRONİK ÜRƏK ÇATIŞMAZLIĞI, ARTERİAL HİPERTENZİYANIN ÜRƏK - DAMAR KONTİNUUMUNUN XARAKTERİK MƏRHƏLƏSİ KİMİ

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Tədqiqatın məqsədi ürəyin sol mədəciyinin sistolik funksiyasının saxlanması ilə gedən xronik ürək çatışmazlığı xəstəliyinə aid tədqiqatlarının müqayisəli analizi olmuşdur.

Təhlükə faktorundan başlayaraq xroniki ürək çatışmazlığının inkişafına gətirib çıxaran klinik və patogenetik hadisələrin təkamülü E.Braunwaldın "Ürək-damar" kontinuumu (ÜDK) nəzəriyyəsində ilk dəfə ifadə edilmişdir. "Ürək-damar" kontinuumu yolu üzrə inkişaf edən prosesdə əsas rol oynayan arterial hipertenziya və ürəyin hipertonik dəyişməsi həmin prosesin bir neçə mərhələsini aşaraq sonda geri dönməz dəyişikliklərin inkişafına səbəb olur. Ürəyin sol mədəciyinin sistolik funksiyasının saxlanması ilə gedən xronik ürək çatışmazlığı zamanı şərti olaraq proses periferiyadan başlayır (məs. arterial hipertenziya) və sonra ürəkdə patoloji proseslə (hipertrofiya, işemiya, aritmiya) müşayiət olunur. Fundamental və praktik kardiologiya üçün bu məsələlərin öyrənilməsi aktualdır, çünki onların həlli AH-lı xəstələrin müayinəsinin keyfiyyətinin yüksəldilməsinə yönəldilmiş tövsiyələrin hazırlanmasına, fəsadların inkişafının qarşısını almaq məqsəd ilə müalicəni optimallaşmasına və dinamik monitorinqin inkişafına imkan verəcək.