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Jakość SPORCIE MIĘDZYNARODOWA KONFERENCJA NAUKOWA
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W związku z zapotrzebowaniem na szukanie odpowiedzi dotyczącej jakości w sporcie oraz podnoszeniu efektywności wyników klubów sportowych Wydział Nauk Ekonomicznych i Zarządzania, Wydział Nauk Pedagogicznych, Uniwersyteckie Centrum Sportowe Uniwersytetu Mikołaja Kopernika, oraz Wydział Kultury Fizycznej, Zdrowia i Turystyki Uniwersytetu Kazimierza Wielkiego stworzyły projekt konferencji naukowej pt. Jakość w sporcie.
Bloki tematyczne: zarządzanie jakością w sporcie, sport jako forma autokreacji, oraz psychorehabilitacja i pomoc psychopedagogiczna w sporcie, prawo sportowe.

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FAMOUS MORPHOLOGISTS WHO DIED YOUNG

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Abstract

Article is about scientists, who died young: A. Giliani, M. della Torre, C. Varolio, R. de Graaf, J.G. Zinn, M.F.X. Bichat, A. Burns, O. Deiters, F.C. Boll, J. Paneth and H. Lissauer.

Their contribution into anatomy and allied sciences and brief biographical information are given.

Conclusions. They were talented, and although the life flow brings to oblivion all that was ever known or done by human, yet the memory of them remains extending their century on the pages of the history of medicine.

Key words: history of morphology, biography.

Mankind is familiar with case scenarios, when a person, having lived a short life no longer than the threshold of thirty-three years old (the age of Christ), however, leaves a valuable mark in history. Usually, at that age, it is an occasion to look back and analyse the first results of life. For some, however, it is the age where great works were at their peak, before they are put out by the shortcomings of life. Among them were the artists Masaccio (1401-1428) and Giorgione (1477/78-1510), poets Mikhail Lermontov (1814-1841) and Sergey Yesenin (1895-1925), writers Wilhelm Hauff (1802-1827) and Nikolai Ostrovskiy (1904-1936), composers Franz Schubert (1797-1828) and Giovanni Battista Pergolesi (1710-1736), musicians Jimi Hendrix (1942-1970) and Janis Joplin (1943-1970). There are similar examples in the history of morphology.

Alessandra Giliani (1307-1326) was apparently, the first female-anatomist. While studying medicine at the University of Bologna [1], she was the assistant to one of the "fathers of modern anatomy", Mondino de Liuzzi (c.1270-1326), who was the author of the first anatomy manual since Galen's

time. The manual stood 25 editions and later became a textbook that lasted for about two hundred years. Mondino de Liuzzi was one of the first to dissect cadavers in medieval Europe, and Alessandra was present in his dissection for demonstration in anatomy classes. This girl developed a method of vascular infusions of wax for the smallest vessels. After an early death at the age of 19, she was forgotten for a long time until in 1857, when the Italian historian, Michele Medici, published the history of the Bologna anatomical school, from which the contributions of Alessandra Giliani were known [2].

Marcantonio della Torre (1481-1511) earned doctorate degree in philosophy on December 22, 1497 and in medicine on February 1, 1501 at the University of Padua. Later he became professor of theoretical medicine of the University of Padua, and in 1510 moved to Pavia, where he became professor of anatomy. He died of the plague, infected by one of his patients [3]. He was considered one of the most famous anatomists of his era.

For a long time he was considered as the person whom the genius Leonardo da Vinci owed his anatomical knowledge to. That misconception appeared thanks to Giorgio Vasari (1511-1574), the author of the unique work "Lives of the most eminent painters, sculptors and architects," who wrote the following: «He [Leonardo da Vinci] afterwards gave his attention, and with increased earnestness, to the anatomy of the human frame, a study wherein Messer Marcantonio della Torre, an eminent philosopher, and himself, did mutually assist and encourage each other. Messer Marcantonio was at that time holding lectures in Pavia, and wrote on the same subject; he was one of the first, as I have heard say, who began to apply the doctrines of Galen to the elucidation of medical science, and to diffuse light over the science of anatomy, which, up to that time, had been involved in the almost total darkness of ignorance. In this attempt Marcantoinio was wonderfully aided by the genius and labour of Leonardo, who filled a book with drawings in red crayons, outlined with the pen, all copies made with the utmost care from bodies dissected by his own

hand. In this book he set forth the entire structure, arrangement, and disposition of the bones, to which he afterwards added all the nerves, in their due order, and next supplied the muscles, of which the first are affixed to the bones, the second give the powder of cohesion or holding firmly, and the third impart that of motion. Of each separate part he wrote an explanation in rude characters, written backwards and with the left-hand, so that whoever is not practiced in reading cannot understand them, since they are only to be read with a mirror» [4]. The great artist was a friend of this talented anatomist but despite the opinion of Vasari, the influence of della Torre on Leonardo is exaggerated. Da Vinci began his extensive anatomical studies 20 years, or even more, before della Torre, and of course, could not be just a simple illustrator for the scientist, who died at the age of 30 and did not leave any completed work. The first manuscript of Leonardo's anatomy is dated 1484, the last one is of the 1515. The great anatomical work conceived by Leonardo remained unfinished.

Constanzo Varolio (Latinized as Constantinus Varolius) (1543-1575) was born in Bologna. At first, he studied philosophy in a local university (the oldest in Europe), then he turned to medicine and studied anatomy under Giulio Cesare Aranti (1530-1589). In 1567, he received the degree of Doctor of Medicine and in 1569, the Senate of Bologna specially created the department of surgery for him where he was the head. He also taught anatomy. In 1572, he moved to Rome, where he was the professor of anatomy at the University La Sapienza and the personal physician of his countryman Pope Gregory XIII – the reformer of the calendar. In Rome, he earned the fame of a good doctor and a surgeon. Varolio died in Rome, in 1575 [5, 6].

His main work «De nervis opticis» was published in 1573 and contained, among other things, the description of the new technology of brain dissection. Before that work, anatomists used to dissect brain from the top, downwards, without removing it from the skull. Varolio proposed to remove the brain from the skull and examine it, moving upwards. This gave him the opportunity to

adequately describe the pons (now called pons Varolii), cerebral peduncles, and hippocampus. He re-discovered the "Musculi erectores penis", now known as mm. bulbospongiosi et ischicavernosi and was one of the first to describe the mechanism of erection correctly [5, 6].

Regnier de Graaf (1641-1673) was born in July 30, 1641 in the Dutch city of Schoonhoven. He studied medicine at the University of Utrecht and Leiden, where he defended his dissertation on the pancreas. After that, he moved to France to the University of Angers where he received the degree of Doctor of Medical Sciences in 1665. In 1667, Graaf returned to Netherlands and settled in Delft, where he worked as a doctor in a local hospital: his career after university was unattainable because he was a catholic in a Protestant country. After the death of his young son, the scientist also died, at the age of 32 on August 17, 1673 [7, 8].

De Graaf is considered to be one of the founders of experimental physiology [9]. In his experiments on dogs, Graaf managed to collect pancreatic juice, bile and saliva from the parotid gland by draining the ducts with a tube made of goose feathers. He did not perform chemical analysis of those fluids, instead he just tasted them. The inventive talent of De Graaf manifested in his student days. When helping his teacher Johann Van Horne (1621-1670) in the preparation of anatomical samples, he created a syringe prototype which he used for infusions of dye and wax for vessels. De Graaf is one of the leaders in the history of investigations of reproductive system in humans and animals [10]. He described the seminiferous tubules, efferent ducts of the testis, yellow body (corpus luteum), and function of the fallopian tubes. Having studied the structure of the female gonads, he found out that they contain vesicles of different size (known now as Graafian follicles), that were supposed to be the eggs. Thus, he called the female gonads - ovaries (ovarium). He was the first to describe the phenomenon of the so-called "female ejaculation" and supposed the existence of a sensitive area in the anterior wall of the vagina, which was

discovered much later by the German gynaecologist Ernst Grafenberg (1881-1957) and was called the “G-spot”. Graaf, furthermore, introduced to the world Antonie van Leeuwenhoek (1632-1723) [7]. In his letter to the Secretary of the Royal Society, he wrote that a wealthy merchant from Delft, Antonie van Leeuwenhoek produced microscopes that had 300-fold magnification; which was a great achievement for the XVII century. The Royal Society contacted Leeuwenhoek and the correspondence began, which lasted for almost half of a century. During this period, Leeuwenhoek wrote about three hundred letters, which described his numerous observations in microscopy, including the first description of microorganisms.

Johann Gottfried Zinn (1727-1759) began to study medicine in his native town Ansbach (Bavaria). He continued his studies in Göttingen, where he received his doctorate degree in 1749. In 1753, he became the director of the Botanical Garden in University of Gottingen, and two years later received professorship. The scientist died on April 6, 1759 in Göttingen [11].

The main work of Zinn was his book «Descriptio anatomica oculi humani» (1755), which became the first fundamental work containing the most complete description of the human eyeball. Zinn made some important discoveries about the structure of the iris, ciliary body, lens, blood vessels and nerves of the eyeball. Because of his achievement in the field of ophthalmology, many structures of the eyeball were named in his honour: "Zinn’s artery" (central retinal artery), "Zinn’s ligament" (connective tissue giving attachment to the rectus muscles of the eyeball), "Zinn’s membrane" (anterior layer of the iris), "Zinn’s vascular circle" (circles of arteries on the sclera around the intraocular part of the optic nerve), "Zinn’s zone" (a system of fibres fixing the lens) [12]. Zinn was famous not only as an anatomist, but also as a botanist. In 1757, he described the genus Epipactis orchid family Orchidaceae. Famous botanist Carl Linnaeus (1707-1778) named the plant Zinnia after Zinn.

Marie Francois Xavier Bichat (1771-1802) was born in Thoirette. His first teacher of anatomy was his father. Bichat studied medicine at Montpellier and Lyon. In 1793, Bichat went to Paris, where he studied surgery under the guidance of Pierre-Joseph Desault (1738-1795). In 1797, he began to lecture on anatomy, physiology and surgery. Also, in 1800, he was appointed as a major physician in Paris hospital, Hotel-Dieu, where he worked until his death followed at the age of 31 [13].

Bichat is the founder of histology despite the fact that he never used a microscope. He made a significant contribution to the understanding of the human body composition. In his opinion, tissues are the basic structural and physiological units of life. Each type of tissue is characterized by its own specific function: the nervous tissue - sensitivity, muscle - contractility, etc., as well as their morphological, chemical and biological properties. He proposed the scientific classification of tissues, which, in his view, are combined into a system and form organs. He coined the idea that the nervous system possesses both animal and vegetative parts and also coined the term "autonomous nervous system". These ideas were set out in his work “Recherches physiologiques sur la vie et la mort” (Physiological researches on life and death) (1800). Bichat is considered as "father of descriptive anatomy". He conceived to write a five-volume treatise «Anatomie Descriptive», in which he intended to give a description of all the parts and organs of the body. He managed to complete only two books. The last three volumes were completed by his pupils M.F.R. Buisson (1776-1805) and P.J. Roux (1780-1854), and were published in 1805 [13].

Alan Barnes (1781-1813) was born in Glasgow, Scotland, on September 17, 1781. Barnes never completed medical training in University, which, however, did not prevent him from becoming a famous surgeon. In 1804, upon the invitation of Russian Empress Catherine II, Barnes was a surgeon in the royal hospital. In addition, as an assistant to his older brother, he took part in the autopsies of the dead, and had access to the history of their disease. He

compared clinical observations with autopsy data, and this enabled him to be one of the first to describe the pathomorphological picture of many heart diseases. In 1809, he published a major work of his life, "Observations of the most frequent and important diseases of the heart," which became the UK's first treatise on cardiology. Barnes was the first to propose ischemic theory of anginal pain; to record a case of chloroma; and the first to suggest that phrenic nerve palsy is a sign of thoracic aorta aneurysm. A separate section of the book was devoted to congenital malformations of the heart and great vessels founded by Barnes. In anatomy, he is known for his work "Observations on the surgical anatomy of the head and neck" (1811), which passed through three editions in the UK, and was released in America and Germany. He died in 1813, from peritonitis caused by perforated appendicitis [14].

Otto Deiters (1834-1863) was born in Bonn in 1834, where he received his medical degree in 1856. He wrote his dissertation on the muscle fibers «De incremento musculorum: Observationes anatomico-physiologicae». After a short stay in Berlin, where he was a student of Rudolf Virchow, he returned to Bonn and was appointed professor of anatomy. Parallel to this, he worked as a therapist at the hospital. The financial worries appeared after his father’s death, which drove Deiters into private practice, and this was a burden to him. It distracted him from training, and most importantly, scientific affairs. In the end, it led to his untimely death as he contracted typhus from one of his patients, and died on December 5, 1863 at the age of 29 [15].

In 1860, Deiters published a paper «Untersuchungen über die Lamina spiralis membranacea» which was devoted to the structure of the inner ear. He mentioned for the first time, the presence of the outer phalangeal cells in the spiral organ. These cells are currently known as “Deiters' cells”. But, the greatest glory he brought from his work was the study of the fine structure of the brain. He first described the reticular formation of the brain stem. And in 1865, after his death, the German anatomist Max Schultze (1825-1874) published Deiters’

work «Untersuchungen über Gehim und Rückenmark des Menschen und der Säugethiere», which was devoted to the microscopic structure of the nervous tissue. It was from this work, the presence of neuronal dendrites and axons were first made mention of. It was suggested that the dendrites are connected to each other and form a continuous network. Also in this book, was first described, the lateral vestibular nucleus (the “Deiters' nucleus”) [15].

Franz Christian Boll (1849-1879) was born on February 26, 1849 in Neubrandenburg. Boll studied medicine in Bonn, Heidelberg and Berlin, and in 1870 he worked at the Institute of Physiology E. du Bois-Reymond in Berlin. Later, he became a professor at the University of Genoa, and from 1873 to 1879 worked as a professor of physiology at Rome, where he died on 19 December 1879 at the age of 30 [16].

When Boll was a student, he wrote a treatise on the histological structure of the tooth pulp «Untersuchungen über die Zahnpulpa» under the guidance of Max Schultze. In 1869, Franz Boll published a monograph "Beiträge zur mikroskopischen Anatomie der acinösen Drüsen", in which he described the basal cells in the lacrimal gland, and myoepithelial cells of ectodermal origin in the secretory compartments of some glands. Both types of cells are now known as "Boll’s cells". He became famous on November 12, 1876, at a meeting in the Berlin Academy, were he reported the discovery of the retinal pigment [17]. This discovery was feasible after a series of experiments: he drew attention to the fact that a frog’s retina is sensitive to light by showing that light changes its colour to reddish yellows, followed by discolouration. Boll also demonstrated that the retina returns to its original colour if the animal spends some time in the dark. His studies were continued by Wilhelm Kühne (1837-1900), who isolated retinal pigment, chemically analyzed it and proposed to call it "rhodopsin". Kühne’s works formed the basis for the modern understanding of the molecular mechanisms of vision.

Joseph Paneth (1857-1890) was born in Vienna and was the head of the department of physiology at Breslau and Vienna. In 1888, he described the secretory cells in the crypts of the intestinal mucosa, which now bear his name, "Paneth cells." He was a friend of Sigmund Freud, and was in correspondence with the famous philosopher Friedrich Nietzsche. Paneth died on January 4, 1890 [18].

Heinrich Lissauer (1861-1891) studied medicine at the universities of Heidelberg, Berlin and Leipzig, graduated in 1886. He worked as a neurologist in a psychiatric hospital in Breslau (now Wroclaw), and was an assistant of Carl Wernicke. Lissauer died on September 21, 1891 [19].

Lissauer was famous for his work in pharmacology, anatomy and pathology of the nervous system. In 1886, he described the tractus dorsolateralis in the spinal cord (Lissauer's tract) [20]. He is also known for the first description of "Lissauer's paralysis" – a typical form of progressive paralysis, including manifested aphasia, monoplegy and seizures. It was published posthumously.

Conclusions

They were talented, and although the life flow brings to oblivion all that was ever known or done by human, yet the memory of them remains extending their century on the pages of the history of medicine.

References

1. Alessandra Giliani Available via http://en.wikipedia.org/wiki/Alessandra_Giliani (Accessed 09 June 2013).

2. Medici M. Compendio storico della scuola anatomica de Bologna. Volpe and Sassi, Bologna, Italia, pp 28-30, 1857.

3. Gnudi M.T. Torre, Marcantonio della Available via http://www.encyclopedia.com/doc/1G2-2830904342.html (Accessed 09 June 2013).

4. Lives of the most eminent painters, sculptors, and architects: translated from the Italian of Giorgio Vasari. With notes and illustrations chiefly selected from various commentators by Mrs. Jonatan Foster. Vol. II. Bell and Daldy, London, Great Britain, pp 380-381, 1871.

5. Tubbs RS, Loukas M, Shoja MM, Apaydin N., Ardalan MR, Shoukouhi G, Oakes WJ. Constanzo Varolio (Constantinus Varolius 1543-1575) and the pons Varolii. Neurosurgery 2008; 62(3):734-736.

6. Zago S, Meraviglia MV. Costanzo Varolio (1543–1575). J Neurol 2009; 256:1195-1196.

7. Kutia SA. Contribution of students to the making of morphology. From history of discoveries. Proceeding of CSMU 2010; 146(5):20-23.

8. Jay V. The Legacy of Reinier De Graaf. Arch Pathol Lab Med 2000; 124(8):1115-1116.

9. Ragland ER. Experimenting with Chymical Bodies: Reinier de Graaf's Investigations of the Pancreas. Early Sci Med 2008; 13(6):615-664.

10. Houtzager HL. Reinier De Graaf and his contribution to reproductive biology. Eur J Obst Gynecol Reprod Biol 2000; 90:125-127.

11. Albert D.M. Dates in ophthalmology. New York/London: The Parthenon Publishing Group, 2002. – 232 p.

12. Samusev R.P., Gontcharov N.I. Eponyms in morphology. – Moscow: Medicine, 1989. – 352 p.

13. Shoja M.M., Tubbs R.S., Loukas M., Shokouhi G., Ardalan M.R. Marie Francois Xavier Bichat (1771–1802) and his contributions to the foundations of pathological anatomy and modern medicine // Ann. Anat. – 2008. – Vol. 180. – P. 413-420.

14. Acierno L.J. The history of cardiology, London, Parthenon Publishing, 1994. – 758 p.

15. Deiters V.S., Guillery R.W. Otto Friedrich Karl Deiters (1834–1863) // J. Comp. Neurol. – 2013. – Vol. 521. – P. 1929-1953.

16. Franz Christian Boll. Available via http://en.wikipedia.org/wiki/Franz_Christian_Boll (Accessed 15 June 2013)

17. Wolf G. The Discovery of the Visual Function of Vitamin A // J. Nutr. – 2001. – Vol. 131. – P. 1647-1650.

18. Joseph Paneth. Available via http://en.wikipedia.org/wiki/Joseph_Paneth (Accessed 15 June 2013)

19. Kutia S.A. Jubilees in history of morphology in 2011. – Morphology. – 2011. – Vol. V, №1. – P. 59-61.

20. Pearce J.M.S. The development of spinal cord anatomy // Eur. Neurol. – 2008. – Vol. 59. – P. 286-291.