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EVGENY SERGEEVICH BOTKIN AND SERGEY SERGEEVICH BOTKIN AS REPRESENTATIVES OF THE SCIENTIFIC CLINICAL SCHOOL SERGEI PETROVICH BOTKIN

Abstract

The article is devoted to activity of the sons of the outstanding Russian clinician and scientist Sergey Petrovich Botkin (1832-1889), Eugene Sergeevich Botkin (1865-1918) and Sergey Sergeevich Botkin (1859-1910), in the field of medicine. Sergey Petrovich Botkin is the founder of the first in Russia and one of the largest scientific therapeutic schools. His sons were among the doctors who were trained in the clinic of the Military Medical Academy while Sergey Petrovich Botkin worked there; however, their names are not traditionally mentioned among his students in the publications on the scientific clinical school of Sergey Petrovich Botkin. The authors made an attempt to trace the life stages of the sons of Sergey Petrovich Botkin, in particular, study and work in the Military Medical Academy, scientific training abroad, medical activities in healthcare institutions of St. Petersburg and organization of medical care as part of the Red Cross during the Russo-Japanese War (1904-1905). The work of Eugene Botkin as the family physician of the last Russian Emperor Nicholas II is considered separately. The article reveals the influence of S.P. Botkin and his closest disciples on E.S. Botkin and S.S. Botkin, as well as the continuity of clinical views and research of S.P. Botkin and his sons. The authors emphasize the similarity of ethical principles of medical activity applied by Sergey Petrovich Botkin and his sons. The materials presented in the article confirm that the sons of Sergey Petrovich Botkin, Eugene Sergeevich Botkin and Sergey Sergeevich Botkin, belong to his scientific clinical school.

Key words: *Sergey Petrovich Botkin, Eugene Sergeevich Botkin, Sergey Sergeevich Botkin, history of internal medicine, clinical medicine*

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Introduction

Distinguished Russian clinician Sergey Petrovich Botkin (1832–1889) is the founder of the first Russian and one of the largest scientific therapeutic schools [1]. Under his leadership, 107 residents were trained and 87 of them successfully defended their PhD theses in Medicine. More than 40 of his students were awarded the title of professor, and 27 of them specialized in internal medicine [2].

His sons were among doctors who took a training course in the hospital of the Military Medical Academy during his active years [3]. Eugene Sergeevich Botkin (1865–1918) and Sergey Sergeevich Botkin (1859–1910) left a noticeable mark in the history of medicine. Works devoted to the scientific clinical school of S.P. Botkin do not usually mention his sons among his students [4, 5]. It appears that the personalities of E.S. Botkin and S.S. Botkin are not only worthy of an in-depth

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study, but should also be considered when analyzing the influence of their father's personality and ideas on their work.

Sergey and Eugene Botkin Parenting and Primary Education

The atmosphere in the home of the Botkins significantly influenced the formation of the personalities of Sergey Sergeevich and Eugene Sergeevich.

According to the memoirs of N.A. Belogolov, who was Sergey Petrovich's friend and biographer, S.P. Botkin "... was of a mild and easygoing nature, completely immersed in his work. He didn't care about little things of life, avoided quarrels and didn't like unnecessary disputes. All these peaceful personal qualities were particularly vivid in the home environment; here he was open-hearted and loving, possessing an inexhaustible good nature and mild humor. Being surrounded by his twelve children aged 1 to 30 (he had five sons and one daughter from the first marriage, and six daughters from the second one), he looked like a true biblical patriarch; his children adored him despite the fact that he knew how to keep home discipline and blind obedience to himself..." [6].

The mother of Sergey Sergeevich and Eugene Sergeevich — Anastasia Alexandrovna nee Krylova (1835–1875), the first wife of S.P. Botkin, had an excellent education, was proficient in foreign languages, played music [2]. According to comments by contemporaries, Anastasia Alexandrovna "passionately loved her children but still knew how to keep the necessary pedagogical self-control, carefully and intelligently attended to their education, and timely eradicated their weaknesses..." [6].

The house of Sergey Petrovich Botkin was open to prominent men of science and art. Among Botkin's friends and patients were famous figures of Russian culture, such as M.E. Saltykov-Shchedrin, N.A. Nekrasov, I.S. Turgenev, N.N. Kramskoy, A.P. Borodin, M.A. Balakirev [7]. According to N.A. Belogolov, "Botkin's Saturdays" are famous for the fact that "...during their 30-year existence, almost all Petersburgers from scholarly, literary, artistic and, of course, medical circles visited them" [6].

It is interesting to note that A.A. Botkina's brother, Victor Alexandrovich Krylov, was a famous Russian playwright and critic. According to his contemporary, "V.A. Krylov undoubtedly occupies one of the prominent places in the history of Russian literature of the nineteenth century. Apart from Ostrovsky, it's hardly possible to mention any other playwright similar to V.A. Krylov, who so generously supported the repertoire of the Russian drama theater and, moreover, practically did so much for the development of theatrical art" [8].

Vasily Petrovich Botkin, S.P. Botkin's brother, was an outstanding Russian writer and critic. According to Maxim Gorky, his "Letters from Spain are not comparable to any other literary work. It is the only book about a foreign country written by a Russian" [9]. Subsequently, the brothers' wide area of thought and cultural knowledge contributed to the fact



Figure 1. Monument to Sergey Petrovich Botkin (1832-1889) near the therapeutic clinic of the Military Medical Academy in St. Petersburg

that Eugene Botkin worked as a doctor in the Court Chapel for a short period of time [10], while Sergey Sergeyeovich Botkin became a famous art collector, a full member of the Imperial Academy of Arts [11]. Alexandre Benois wrote: “No, Sergey Sergeyeovich had nothing in common with a pedant collector, a dry, aloof moneymaker. Rather, he was a passionate hunter. Sergey Sergeyeovich spent a lot of time trying to find and then get art works worthy of being included into his collection. And if you happen to meet him riding in his open carriage along St. Petersburg’s streets, you know that he has either just left a patient and is going to an antique dealer, or, vice versa, from an antique dealer to one of his patients” [12]. Similar to his father’s home, the mansion of S.S. Botkin and his wife (a daughter of P.M. Tretyakov, the founder of the Moscow Art Gallery) was situated at the corner of Potemkinskaya and Furshtadtskaya streets became one of the centers of St. Petersburg cultural life [13].

Sergey Petrovich Botkin raised his children on the ideals of public service, and the Botkin brothers grew up with a firm foundation of adherence to their profession and love for the motherland.

After an excellent primary home education, both brothers successfully continued their studies at the 2nd St. Petersburg Gymnasium, after which they wanted to choose the profession of a doctor following their father’s example. However, they initially had to enroll in the Faculty of Mathematics and Physics at St. Petersburg University instead of entering the Military Medical Academy because the undergraduate admission to the Academy was canceled as a part of reforms implemented there in those years. The Academy only accepted third-year students from different Russian universities [10].

Medical Education and Medical Practice of E.S. Botkin and S.S. Botkin

The Botkin brothers took their first step towards their medical profession when they entered the Military Medical Academy after a short period of a successful study at the university. Upon graduating from the academy, Sergey Sergeyeovich Botkin was awarded the I.F. Bush Prize for academic excellence, and his name was included in the Academy Wall of Honor [14]; Eugene Sergeyeovich Botkin

was awarded the title of a doctor with distinction and a personalized Paltsevskaya Prize which was awarded to “the student who got the third highest score in his course” [10].

It should be particularly noted that the study at the Military Medical Academy, where a whole series of famous scientists worked, including S.P. Botkin and his students (A.G. Polotebnov, V.A. Manassein, N.P. Simanovskiy, D.I. Koshlakov, I.P. Pavlov, etc.), made the invaluable contribution to the formation of the brothers’ medical skills. [2]. Recalling his father’s personality in a letter to his brother, E.S. Botkin admired his work: “What an outstanding interest and passion he had during his work!” [15].

Ivan Petrovich Pavlov — the first Russian Nobel laureate, an outstanding physiologist, a student and a colleague of S.P. Botkin — greatly appreciated his teacher throughout his life. I.P. Pavlov said the following about S.P. Botkin: “I was privileged to work close to the deceased clinician in the laboratory industry for 40 years... Not being enticed by immediate success, his deep mind was looking for a solution to the great puzzle: what a sick person is and how to help him/her — both in the laboratory and in a live experiment. For decades I saw his students going to the laboratory, and such a high experiment appreciation by the clinician, in my opinion, contributes to Sergey Petrovich’s glory no less than his clinical work known throughout Russia” [16].

I.P. Pavlov was the research advisor of Sergey Sergeyeovich Botkin’s PhD thesis entitled “The Influence of Rubidium and Cesium Salts on the Heart and Blood Circulation Resulting from the Legality of the Alkali Metals Physiological Effect” (1888) and the opponent during Eugene Sergeyeovich Botkin’s defense of his PhD thesis entitled “The Albumoses and Peptones Influence on Certain Animal Functions” (1893).

Like their father, both brothers completed their scientific internship in leading European medical institutions: Sergey Sergeyeovich Botkin — in 1889–1892 [7], Eugene Sergeyeovich Botkin — in 1890–1892 and in 1895–1896 [10].

Sergey Sergeyeovich Botkin’s establishment as a clinician was directly guided by his father during their work in an academic therapeutic hospital. S.S. Botkin gained important practical experience



Figure 2. Examination of the patient by professor Sergey Petrovich Botkin in the clinic

in the City Camp Hospital where he worked as a department head for several years [41]. In 1896, Sergey Sergeyevich Botkin was elected the head of the first Russian department of bacteriology and contagious diseases at the Military Medical Academy, and in 1898 he became the head of the academic therapeutic hospital which had been previously headed by his father [3].

S.S. Botkin's key scientific works are devoted to the research of gastric acid during fever, the study of anaerobic bacteria (he designed a device for growing anaerobic bacteria), and the study of leukolysis. He was the first to point out the possibility of examining the leukolysis phenomenon under a microscope based on the tracking of lymphocytes, destroyed during the smear preparation process, which were later called Botkin and Gumprecht bodies [44].

Eugene Sergeyevich Botkin began his medical career as an assistant doctor at the St. Petersburg Mariinskii Low-Income Hospital in January 1890,

after his father's death [17]. V.I. Alyshevskiy, one of S.P. Botkin's students, was the chief physician at that time. He created a system to allow doctors to improve their qualifications, which was similar to the academic one [10].

After his father's death, E.S. Botkin wrote the following about the therapeutic specialty, S.P. Botkin wished for his sons: "... this will is sacred to me as it belongs not only to my father, but also to my indispensable teacher. I'm doing my best to follow my father's will and pray for help in fulfilling at least a small part of what my father wanted me to achieve" [15].

Over the years, in the Mariinskiy Hospital E.S. Botkin published a number of original scientific papers on the description of interesting clinical observations and the study of the leukocyte functions [40]. E.S. Botkin's experience and his special attention to patients' needs contributed to his recommendation for the position of a doctor of the Sisters of Mercy Communities [10], and his high



Figure 4. *Sergey Sergeevich Botkin (1859-1910)*



Figure 3. *Eugene Sergeevich Botkin (1865-1918)*

scientific influence saw him elected as a privat-docent at the Military Medical Academy [17, 18]. Like their father who twice served as a doctor in military operations — in the Crimean (1853–1856) and the Russo-Turkish (1877–1878) Wars, the brothers participated in the Russo-Japanese War (1904–1905) providing medical care. Sergey Sergeevich Botkin worked as a chief representative of the Red Cross in the Northeast Region (in Vladivostok, Khabarovsk, and then in Harbin) [3]. Eugene Sergeevich Botkin worked as a medical assistant chief representative of the Red Cross in the field forces and directly participated in the battles of Wafangou, Liaoyang and the Battle of Shaho, whereupon he was awarded Orders of Saint Vladimir, 3rd and 4th classes, for Personal Courage [10].

Eugene Botkin's literary diary "Light and Shadows of the Russo-Japanese War of 1904–1905. (From Letters to His Wife)", published in 1908 in the form of letters to his wife from the front line, became vivid evidence of the epoch [19]. Here he partly repeated the experience of his great father, who had published "Letters from Bulgaria" — the diary of his medical observations from the front line of the Russo-Turkish War [20]. E.S. Botkin's book is also perfectly written and full of impartial descriptions of reality and accurate doctor's observations.

The Botkin brothers summarized the experience gained in providing health care during military operations and shared the results at meetings of scientific communities. In 1906, Eugene Sergeevich Botkin presented a report "The Red Cross Activity in the Field Forces Area During the Russo-Japanese War of 1904–1905" at the meeting of the Society of Russian Doctors dedicated to the memory of S.P. Botkin, and in 1909 Sergey Sergeevich Botkin presented a report "On Manchurian Typhoid" at the first congress of therapists in Moscow.

It should be noted that the medical practice of S.S. Botkin and E.S. Botkin was guided by principles of attitude towards patients similar to those demonstrated by their father throughout his life. "Thousands of his (S.P. Botkin's) patients and students can witness his gentle and remarkably cordial treatment of patients, rejection of self-profit, devotion not only to science, but also to every suffering person" [6].

It is no coincidence that comments by contemporaries on the brothers' medical practice are so similar to comments on S.P. Botkin.

Renowned Russian philosopher Vasily Rozanov told about Sergey Sergeyeovich Botkin that "being a military doctor and a professor, he certainly served like any other decent Russian person, but he was a man who didn't care about his uniform or fixed working hours. The feeling of privacy and exclusive home atmosphere surrounded him. There was no other person less official than he was..." [21]. Sergey Dyagilev, another well-known Russian artist, who was acquainted with Sergey Sergeyeovich Botkin, recalled that his "healing power" was based not on science but on his cheerfulness, and this helped him establish close relations with people and experience their most diverse sensations" [22].

The St. George Sisters of Mercy Community, which put E.S. Botkin forward for a decoration, emphasized that "possessing extensive knowledge, experience and passion for his work, Eugene Sergeyeovich cordially, carefully and kindly treated not only his patients, but all people who interacted with him" [23]. And the letter of appreciation presented to E.S. Botkin by nurses he had worked with during the Russo-Japanese War, read: "Dear Eugene Sergeyeovich, for the short period of time spent with us, you've done so many good and kind things that now, when we have to part with you, we want to express our deep, sincere feelings. Instead of a stern, unemotional leader, we've seen a deeply dedicated, sincere, sympathetic, empathetic person who is like a father ready to help in difficult times, and it's so important here, far from our relatives, especially for women who are often-times inexperienced, impractical and young. Dear Eugene Sergeyeovich, accept our deep and sincere gratitude..." [15].

Working as a teacher, E.S. Botkin sought to promote a careful, humane treatment of patients among the academy students. In the opening lecture given to students of the Military Academy of Sciences on October 18, 1897, E.S. Botkin emphasized: "Patients' confidence you've gained becomes a sincere devotion to you, when people get convinced of your cordial attitude towards them. When you enter the ward, you find patients in a cheerful and cordial mood — that is a precious and powerful medication that can be more efficient than

any mixtures and powders... But your heart should be constantly open, and you need to sincerely and cordially care about every sick person. So accustom yourself to provide help and care to those who need them. Let's go with love to patients in order to learn how to be useful to them" [24].

Unfortunately, S.S. Botkin's scientific and social activities were interrupted on January 29, 1910, when he suddenly died of stroke [14].

Eugene Sergeyeovich Botkin was also not destined to have a long-lasting medical career. On April 13, 1908, like his father, he was appointed as the Tsar's family physician [10]. In this position, Eugene Sergeyeovich accomplished a moral medical feat — after the abdication of Nicholas II in 1917, he continued to perform his duties as a physician, provided moral support to the Tsar's family members and voluntarily went into exile with them, where he conducted free private practice [15, 25]. In the night of July 16th to 17th (N.S.), 1918, Eugene Botkin, members of the royal family and three servants were shot in Yekaterinburg [17]. On February 3, 2016 the Bishops' Council of the Russian Orthodox Church canonized Botkin as Righteous Passion-Bearer Eugene the Physician [15].

Conclusion

Eugene Sergeyeovich Botkin and Sergey Sergeyeovich Botkin became worthy successors of Sergey Petrovich Botkin's work. The medical activities of the Botkins brothers were in harmony with their father's words [26]: "The moral development of a practicing physician will help him maintain the mental balance that will enable to fulfill the sacred duty to his fellowmen and motherland, and this will determine the true happiness of his life."

The analysis of the life and medical practice of the Botkin brothers shows that they passed through the key stages of medical education and clinical training (at the Military Medical Academy and hospitals in St Petersburg) under the leadership of S.P. Botkin and his closest students. The Botkin brothers' scientific researches continued the laboratory work actively developed by their father and teacher, and their practical work (following S.P. Botkin's ideas) in the field of both civil and military medicine delivered benefits to the motherland.

Conflict of interests

The authors declare no conflict of interests.

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