About the pathologist-morphometrist Georgy Gerasimovich Avtandilov

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The article shows the life and creative path of Georgy Gerasimovich Avtandilov, the outstanding domestic pathologist-morphometrist, who for the first time created the Soviet school of quantitative pathological anatomy. A Doctor of Medical Sciences, Professor, Academician of the Russian Academy of Natural Sciences, Honored Doctor of Kabardino-Balkaria, Honored Scientist of the RSFSR and the Republic of North Ossetia-Alania, Avtandilov was born in the town of Kizlyar. After graduating from high school, he entered the Novocherkassk Industrial Institute, but in his second year of studies he was called up to serve in the Workers-Peasant Red Army in the town on the Bialystok ledge of the border, where in 1941 he was captured and held in the Lamsdorf concentration camp almost until the end of the war, having gone through a living hell. After the end of the war and the end of the North Ossetian Medical Institute, the fate of G. G. Avtandilov developed in such a way that the choice was made for life in favor of pathological anatomy.

Keywords: Georgy Gerasimovich Avtandilov, Great Patriotic War, scientist, educator, pathologist-morphometrist.

The article is dedicated to a sincere and wonderful optimist person, the outstanding scientist — pathologist-morphometrist Georgy Gerasimovich Avtandilov (21.09.1922–14.12.2009).

September 21, 2022 marks the 100th anniversary of the birth of an outstanding Russian scientist and educator, pathologist-morphometrist, Honored Doctor of Kabardino-Balkaria, Honored Scientist of the RSFSR and the Republic of North Ossetia-Alania, Academician of the Russian Academy of Natural Sciences (RANS), Doctor of Medical Sciences, Professor Georgy Gerasimovich Avtandilov (Fig. 1)[1].

He was born on September 21, 1922, on the day of the Nativity of the Most Holy Theotokos, in the town of Kizlyar, Tersk Region, North Caucasus Territory (now Dagestan) in the family of one of the brightest organizers of Soviet healthcare. Mother: Avtandilova (nee Ilyazova) Margarita Isaevna, father: Avtandilov Gerasim Khristoforovich [1] (Figs 2–4).

In 1939, Georgy graduated with honors from Kizlyar Secondary School no. 14 and was enrolled without exams at the Energy Faculty of the Novocherkassk Industrial Institute, and in 1940 he was called up to serve in the Workers-Peasant Red Army in the 95th Separate Communications Battalion of the 86th Red Banner Division of the 10th Army, located in the town of Tsekhanovets (Bialystok ledge of the border), as a linear overlooker

[1] The author expresses his sincere gratitude to Mrs Elena Georgievna Tarasova for providing family photographs of G. G. Avtandilov.

Fig. 1. Georgy Gerasimovich Avtandilov (21.09.1922–14.12.2009)

Fig. 2. Gerasim Khristophorovich Avtandilov — G. G. Avtandilov's father, 1916

Fig. 3. Margarita Isaevna Avtandilova (nee Ilyazova) — G. G. Avtandilov's' mother, 1922

Fig. 4. Preschooler Georgy Avtandilov with his parents

Fig. 5. Georgy Avtandilov — a schoolboy of the Kizlyar Secondary School no. 14

Fig. 6. Foreman Georgy Avatandilov, service in the Workers-Peasant Red Army, as a linear overlooker, town of Tsekhanovets (1940–1941)

with the assignment of the military rank of foreman (Figs 5, 6). In 1941, he was captured and held in the Lamsdorf concentration camp no. 318 (Stalag F-318), having gone through a living hell, until March 17, 1945, when he was released from captivity by the 55th Corps of the 21st Guards Army of the 1st Ukrainian Front and the next day he immediately joined the 240th Infantry Regiment of the 21st Guards Army, becoming a submachine gunner, and fought in its composition until Victory Day [2].

This is how G. G. Avtandilov describes some episodes from his life in his book of memoirs "Conscience and Honour" (Moscow, 2005), presented by him on February 4, 2006, to the author of this article with the following inscription: "To Dear Alexander Nikolaevich Zubritsky from the author" [3].

"In our carriage, no one knew where they would have to do military service. I had not traveled further north yet, and through the small window of the carriage I looked with curiosity at the stations, villages, cities, rivers, fields and forests rushing towards the train. It was our vast, boundless country, which we were very proud since childhood. Finally, we arrived in Bialystok. From this station, our team walked to the southwest for another 18 km, to the town of Tsekhanovets, located a few kilometers from the new State Border of the USSR, passing along the Bug River. Thus, our team of conscripts from Vladikavkaz (renamed Ordzhonikidze at that time) came to serve in the unit serving in the westernmost part of the country. We had to give a link between the long-term concrete fortifications on the new state border of the country. We slept in a wooden barrack on bunks, without undressing. Upon returning to the barracks of Tsekhanovets, as in a warm home, life seemed like paradise, although almost a day later, in the morning or at night, the command "Rise! Alarm!" Forced marches with and without gas masks, training in close-to-combat environments, and much more that formed hardy and combat-ready soldiers out of us. A week before the start of the war, on June 14, 1941, a reassuring Transagency of the Soviet Union message was published in the central newspapers, which denied the possibility of a German attack on the USSR. On Saturday, June 21, 1941, our battalion watched the film "Bogdan Khmelnitsky". The clock was 4 hours 15 minutes. A frightened duty officer, Senior Sergeant Yakovlev, ran up to me: "Comrade foreman, what should I do? — Declare a combat alert! The war! — I gave him an order, — How is it that we are at peace with Germany? — He asked me in perplexity". I shouted the order again: "Combat alert!" — the signalmen under construction had already heard it. As military historians have now established, by the time of the attack on our country, the enemy had a 4–5-fold superiority in manpower and military equipment. Therefore, military operations began with the complete domination of enemy aircraft. It was a terrible picture: there were whole and exploded fighters lying on the airfield, and next to them — dead pilots who did not reach the planes. Occupying new frontiers, we saw a fantastic picture — blown up tanks lay along the road for several kilometers, towers on one side, hulls — on the other. Yes, these tanks went to help us to the border, but the dominance of enemy aircraft in the air gave its sad results. When departing to the east, squadrons of Messerschmites with howling sirens flew at our columns every 15–20 minutes. Returning to the car, we found our driver dead, his intestines were hanging from the torn anterior wall of his abdomen to the footboard of the cab. There is nothing worse than captivity, and even fascist captivity, for a crippled soldier deprived of the opportunity to defend himself — this is both physical weakness and mental impotence, the consciousness of the impossibility of resisting the enemy, the every minute threat of reprisal and death, obscurity (all prisoners, as you know, were listed as "missing"). Captured, I looked around the next day. Where did we

get? It was a huge concentration of Soviet prisoners of war on the bank of the Svisloch River. I can't forget the case when in the evening, a dapper German officer approached our group of wounded, picked up one fighter and gave him a sandwich. The prisoner ate it hastily with the greed of a hungry man. When the soldier turned his back on him, the officer took out his browning and shot him in the back of the head. The Red Army soldier fell dead. Such an individual, inhuman, cruel reprisal against unarmed enemy soldiers did not do honor to a Wehrmacht officer, a man, it seemed, of European culture, and I remembered it for the rest of my life… Fifty people were herded into the wagons, each was given a small loaf of black bread. In the Lamsdorf concentration camp no. 318, where we arrived, a separate block was prepared — "F" for Soviet prisoners of war, whom the fascists regarded as a "Bolshevik infection". By the winter of 1942, all the prisoners looked like skeletons covered in leather. I, having a height of 174 cm, weighed 48 kg at the time of the first registration, carried out only in December 1941. An epidemic of typhus broke out in the camp. Up to 100–150 corpses were taken out of the barracks a day on stretchers, hastily put together ladders. The corpses were loaded onto carts "harnessed" by eight prisoners and taken to the cemetery ("friedhof"). The main thing, in these unbearable conditions for a person, was not to lose the human appearance, faith in justice and in Victory. Provocateurs and informers were sent into our ranks. However, as mentioned above, a preliminary assessment of the situation after the liberation of the camp in Lamsdorf by Soviet troops, and the exhumation of corpses from the burial mounds, gave more accurate information — the number of those buried in the cemetery of the Lamsdorf concentration camp reached 80 thousand".

After the end of the Great Patriotic War, having been demobilized, G. G. Avtandilov worked as a laboratory assistant at the Department of Histology of the North Ossetian State Medical Institute from 1945 to 1951. In September 1946, he was enrolled as a student, and in 1951 he graduated from this institute with honors and was sent as a doctor to the city of Nalchik (Kabardino-Balkarian ASSR (Autonomous Soviet Socialist Republic)), where he had intentions of becoming a neuropathologist, since in the last years of the institute he studied pathology of nervous system (Figs 7, 8). Unfortunately, as often happens, there was no vacancy in this discipline, and there was an urgent need for a pathologist and forensic expert. Therefore, it was necessary to start mastering these two specialties and from 1951 to 1965. was the Head of the Pathology Department of the Republican Hospital in Nalchik, and in 1965 — the Head of museum affairs (Fig. 9). In 1952, at the Pathology Department and Forensic Medicine of the Leningrad State Institute for Advanced Medical Training (LSIAMT), under the guidance of Professor P. V. Sipovsky, he completed a six-month specialization [4].

The most important event in his life occurred in 1953, when he married the doctor Lilia Iosifovna Osipova, with whom in subsequent years he had two children: Alexander and Elena (both became doctors) (Figs 10, 11). The wife took over, in addition to medical activities, all the cares of the house and family, without which it would be impossible for the spouse to effectively carry out scientific work throughout their married life, up to the golden wedding [5].

In 1958, G. G. Avtandilov passed a four-month cycle of improvement in pathological anatomy at the Pathology Department of the LSIAMT with the simultaneous defense of a PhD dissertation on the topic: "On the functional, age and pathological morphology of the vascular plexuses of the brain", the scientific supervisor of which was Professor P. V. Sipovsky (Fig. 12). The next day after the defense, the professor told him: "Georgy

Fig. 7. Georgy Avtandilov — a student of the North Osetian State Medical Institute, city of Dzaudzhikau, 1946

Fig. 8. G. G. Avtandilov — graduate of the North Ossetian State Medical Institute, Ordzhonikidze, 1951

Fig. 9. The wife of G. G. Avtandilov — Liliya Osipova, a graduate of the Astrakhan State Medical Institute, 1953

Fig. 10. G. G. Avtandilov — Candidate of Medical Sciences, 1958

Fig. 11. G. G. Avtandilov at work

Fig. 12. Meeting of three front-line soldiers, unconquered by the fascist concentration camp. From left to right: G. G. Avtandilov, M. S. Lotarev, K. A. Simeonov. Town of Nalchik

Gerasimovich, I hope you will be able to publish a monograph on the vascular plexuses of the brain in Nalchik, but do not delay the start of work on your doctoral dissertation. First of all, you should put things in order in registering the manifestations of the atherosclerotic process, achieve uniformity and establish the dynamics of the age-related development of the process in humans. There is no consensus on the last question, there are constant discussions". — "Pyotr Vasilievich, — he replied, — atherosclerosis has been studied for two hundred years, what can be found there that is new?" — "And you will apply your mathematical knowledge to the study of the process as a whole. No one has done this yet", — the professor replied [3] (Fig. 13).

In 1965, he defended his doctoral dissertation on the topic "Dynamics of morphological changes and pathogenesis of atherosclerosis of the aorta and coronary arteries of the heart (biometric study)", the scientific consultant of which was Academician of the USSR Academy of Medical Sciences A. P. Avtsyn [2; 6] (Fig. 14). In the same year, on behalf of Academician, Vice-President of the USSR Academy of Medical Sciences I. V. Davydovsky, Director of the opening Institute of Human Morphology of the USSR Academy of Medical Sciences A. P. Avtsyn invited G. G. Avtandilov to work in Moscow. From 1965 to 1975, G. G. Avtandilov was the head and creator of the first Laboratory of Morphometry and Biophysics, and then — the Central Pathology Laboratory of the Institute of Human Morphology of the USSR Academy of Medical Sciences. From 1975 to 1990 — Head of the Pathology Department at the Central Order of Lenin Institute for Advanced Medical Training and from 1980 to 1990 at the same time, he was the Dean of the Faculty of Medicine and Biology (Figs 15, 16). From 1990 to the end of his life — Professor of the same Department at the Russian Medical Academy of Postgraduate Education [7; 8].

Georgy Gerasimovich is the author of more than 400 scientific publications, including 20 monographs and manuals, 35 aids, methodological recommendations, instructions, 15 inventions and 3 discoveries [9]. His scientific interests are related to the pathology of the cardiovascular system, the central nervous system, medical morphometry and mathematical modeling of pathological processes, early morphological and morphometric diagnosis of malignant tumors, improvement of the organizational foundations of the pathoanatomical service, methods of computer microtelephotometry, etc. [10]. Under his leadership, 32 doctoral and 73 candidate dissertations were prepared and completed [11].

G. G. Avtandilov was a member of the Communist Party Soviet Union, the Scientific Medical Council of the USSR Ministry of Health (1978–1984), the International Society of Stereology and the European Society of Pathology, the Editorial Board of the journals "Arkhiv Patologii", "Zentralblatt für patologie" (Germany), an Honorary Member of the Pathology Societies of Hungary, the Czech Republic, Germany [12]. He was awarded the Order of the Great Patriotic War (II degree), 14 medals, including "For Bravery", "For Victory in the Great Patriotic War of 1941–1945", the I. P. Pavlov Silver Medal (1998), the I. I. Mechnikov Medal (2002), the D. I. Speransky Medal (2002), US Institute of Pathology Medal, the P. Erlich Gold Medal, the R. Virkhov Medal, the A. Schweitzer Medal (Germany, 2002), "Gold Medal for Russia" (ABI, USA, 2006), V. N. Tatishchev's Badge of Honor "For the Benefit of the Fatherland" (2000), the badge "Excellent Health Worker", Certificate of Honor of the Presidium of the Supreme Soviet of the Kabardino-Balkarian ASSR, etc.; Honored Doctor of Kabardino-Balkaria (1961), Honored Scientist of the

Fig. 13. G. G. Avtandilov with his wife and their children, Moscow, 1965

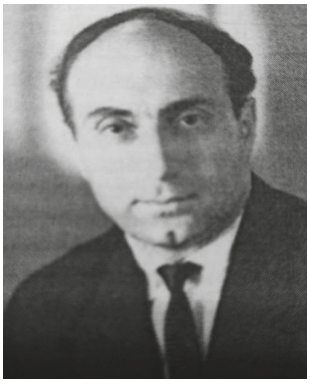

Fig. 14. G. G. Avtandilov — Doctor of Medical Sciences, Moscow, 1965

Fig. 15. G. G. Avtandilov — Head of the Pathology Department of the Central Order of Lenin Institute of Advanced Medical and Dean of the Faculty of Medicine and Biology, Moscow, 1980–1990

RSFSR (1990) and the Republic of North Ossetia-Alania (1999); General Secretary of the Board of the All-Union Scientific Society of Pathologists (1965–1980); Professor (1970); Chairman of the Board of the Unified Scientific Medical Society of the Kabardino-Balkarian ASSR and Chairman of the Medical and Biological Section of the Board of the Republican Branch of the Society "Knowledge" (1959); General Secretary of the Board of the All-Union Scientific Society of Pathologists (1965–1980); Deputy Chairman of the Council of Scientific Medical Societies of the USSR Ministry of Health (1976–1986); Chief Pathologist of Kabardino-Balkaria (1951–1965) and Ministry of Health of the RSFSR (1974–1990); Corresponding Member of the RANS (1991), Academician of the RANS (1992); Expert and Temporary Adviser to WHO in the prepara-

Fig. 16. Academician of the Russian Academy of Natural Sciences G. G. Avtandilov (sitting in the center) with cadets at the Pathology Department during the certification cycle in Russian Academy of Postgraduate Education, Moscow, 2006

Fig. 17. Gravestone monument to Georgy Gerasimovich Avtandilov at the family plot of the Armenian cemetery in Moscow

tion of the International Classification of Diseases of the 9th revision (ICD-9), the International Classification of Oncological Diseases (ICD-O) and the Center for the Study of Kidney Diseases; he founded a new scientific direction — mathematical pathology based on the use of computerized methods of morphometry and stereometry ("Avtandilov's grid") and created a domestic school of quantitative pathological anatomy; using an original technique, direct evidence of the role of intercellular gaps and substances of the vascular wall for the ultracirculation of ions between blood and cerebrospinal fluid is presented, the morphology of the choroid plexuses and the soft meninges of the brain is described; he was the first to mathematically substantiate the laws of the development of atherosclerosis in humans and presented a probabilistic theory of the morpho- and pathogenesis of atherosclerosis [13–15].

Georgy Gerasimovich's motto was diligence, honor, conscience and kindness, classical symphonic music was his interests, and his distinguishing feature — the broadest scientific and cultural outlook, titanic efficiency, intelligence and goodwill, organization and self-discipline, organizational skills, constant striving for new things, initiative in solving problems at the junctures of various sciences [16; 17].

G. G. Avtandilov died on December 14, 2009, in Moscow at the age of 88 after a serious illness. He was buried in the Armenian cemetery in Moscow (Fig. 17).

References

1. Avtandilov Georgy Gerasimovich (21.09.1922–14.12.2009). *Zubritsky A. N. Kto est' kto v patologicheskoi anatomii v Rossii.* Moscow, Astrea Publ., 2017, pp. 20–23.
2. Avtandilov Georgy Gerasimovich (21.09.1922–14.12.2009). *Kto est' kto v patologicheskoi anatomii v Rossii.* Ed. by A. N. Zubritsky. Moscow, Astrea Publ., 2015, pp. 13–15. (In Russian)
3. Avtandilov G. G. *Conscience and honor (memoirs).* Moscow, RMAPE Publ., 2005, 140 p. (In Russian)
4. Avtandilov Georgy Gerasimovich. *International Leaders in Achievement*. Cambridge, IBC, 1997, pp. 16–17.
5. Avtandilov Georgy Gerasimovich. *Dictionary of International Biography.* Cambridge, IBC, 1998, p. 23.
6. Avtandilov Georgy Gerasimovich. *Living Science*. Cambridge, IBC, 2003, pp. 42–44.
7. Georgy Gerasimovich Avtandilov (on the 80th anniversary of his birth). *Arkhiv patologii,* 2002, vol. 64, no. 4, pp. 63–64. (In Russian)
8. Zubritsky A. N. Memorable dates of Russian pathologists 2019. Monograph. *Matematicheskaia morfologiia. Elektronnyi matematicheskii i mediko-biologicheskii zhurnal*, 2019, vol. 18 (3). Available at: http://www.sci.rostelecom67.ru/user/sgma/MMORPH/N-63-html/cont.htm (accessed: 01.05.2022). (In Russian)
9. Avtandilov Georgy Gerasimovich (scientific biographical reference). Moscow, RMAPE Publ., 2000. (In Russian)
10. To the 95th anniversary of the birth of Academician of the Russian Academy of Natural Sciences Georgy Gerasimovich Avtandilov. Zubritsky A. N. *Iubileinye i pamiatnye daty patologoanatomov Rossii za 4 goda (2015, 2016, 2017 i 2018 gody).* Moscow, Astrea Publ., 2018, pp. 368–371. (In Russian)
11. Zubritsky A. N. Biographical questionnaire of Georgy Gerasimovich Avtandilov. *Matematicheskaia morfologiia. Elektronnyi matematicheskii i mediko-biologicheskii zhurnal*, 2015, vol. 14 (4). Available at: http://www.sci.rostelecom67.ru/user/sgma/MMORPH/N-48-html/zubritsky-2/zubritsky-2.htm (accessed: 04.01.2022). (In Russian)
12. Georgy Gerasimovich Avtandilov (on the 50th anniversary of his birth). *Arkhiv patologii,* 1973, vol. 35, no. 4, pp. 92–93. (In Russian)
13. Avtandilov Georgy Gerasimovich. *Five Thousand Personalites of the World.* Raleigh, American Biographical Institute, 1994, 21 p.
14. Georgy Gerasimovich Avtandilov (on the 60th anniversary of his birth). *Arkhiv patologii,* 1982, vol. 44, no. 11, pp. 95–96. (In Russian)

15. Georgy Gerasimovich Avtandilov (on the 70th anniversary of his birth). *Arkhiv patologii,* 1992, vol. 54, no. 11, pp. 46–48. (In Russian)
16. Zubritsky A. The questionnaire portraits of five Russian pathologists. *Virchows Arch.,* 2017, vol. 471, PS-20-004 (Suppl. 1), pp. S245–S246.
17. Zubritsky A. N. *The Dead Wall. Autobiographical sketch*. Moscow, Astrea Publ., 2012, 320 p.

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О патологе-морфометристе Георгии Герасимовиче Автандилове

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Статья повествует о жизненном и творческом пути выдающегося отечественного патолога-морфометриста, создавшего советскую школу количественной патологической анатомии, доктора медицинских наук, профессора, академика Российской академии естественных наук, заслуженного врача Кабардино-Балкарии, заслуженного деятеля науки РСФСР и Республики Северная Осетия-Алания Георгия Герасимовича Автандилова, который родился в городе Кизляре. После окончания средней школы Георгий поступил в Новочеркасский индустриальный институт, но со 2-го курса был призван на службу в Рабоче-крестьянскую Красную армию в город на Белостокском выступе границы, где в 1941 г. оказался в плену и находился в концлагере Ламсдорф почти до конца Великой Отечественной войны, пройдя через все испытания. После завершения войны и окончания Северо-Осетинского медицинского института судьба Г. Г. Автандилова сложилась так, что выбор был сделан на всю жизнь в пользу патологической анатомии.

Ключевые слова: Георгий Герасимович Автандилов, Великая Отечественная война, ученый, педагог, патолог-морфометрист.

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