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Odessa School of Neuromorphology and the Foundation of the Georgian Clinical Neuroanatomy

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ABSTRACT

The article describes the creative path of two outstanding scientists from Novorossiysk University's Medical Faculty, Professors Mykola Saulovich Kakhian and Semen Nikiforovich Kipshidze, who have dedicated themselves to clinical neuromorphology since their student days and throughout their creative lives. Scientists made a significant contribution to the Departments of Anatomy and Neurology at Novorossiysk University. Following the establishment of Tbilisi University in Georgia, they relocated and led the fundamental and clinical scientific schools. The memory of these scientists is preserved at the Alma mater, specifically in the Departments of Human Anatomy, Neurology, and Neurosurgery of Odessa National Medical University (ONMedU). Exhibits and models created by themselves are stored in specialized museums, at the departments of ONMedU and Tbilisi State Medical University, as well as in medical institutions throughout Georgia, and the Museum of the History of Medicine of Georgia.

Keywords: Georgian scientists; Nikoloz Kakhiani; Novorossiysk University; Simon Kipshidze.

INTRODUCTION

Given that Novorossiysk University was the only higher educational institution in the south of the Russian Empire, natives of closely located regions were trained there. Additionally, Bessarabia, Kuban, Don, and Balkan countries, as well as immigrants from the Caucasus, were also widely represented.[1] The logistic capabilities of the region facilitated this, with the presence of some shipping companies having their headquarters in Odessa. For example, the Russian Shipping and Trade Society (Ropit), founded in 1856, was the largest shipping company in Russia. By 1910, its fleet consisted of 76 steamers, covering more than 20 regular routes. Crimean Caucasian line was the most loaded and popular.[2,3]

Thus, it was the shortest way along the Black Sea from Georgia to the developing cultural and scientific center, "Georgian students liked this southern city more than any other city of the Russian Empire".[4]

The opening of the Faculty of Medicine in 1900 attracted students from nearby regions and countries without medical education. As a result, many Georgian doctors received high-quality medical education, as the New Fourth Faculty of IU was equipped with modern technologies and the teaching staff met the highest requirements of the European medical educational system.[5]

REVIEW

Nikoloz Kakhiani

One of the young people enrolled at the medical faculty of INU was Nikoloz (Nikolay) Saulovich Kahiani (Fig.1). He was born on July 11, 1883, in the village of Rokiti (Baghdadi municipality). Parents: Colonel Saul Kahiani, mother Maria Popova. He studied in gymnasiums in Kutaisi and Vladikavkaz. He was well-versed in the exact sciences, and together with his classmates, Evgeny Vakhtangov, he refined his acting skills in amateur performances.[4] In 1904, Nikolai Kahiani was enrolled at the medical faculty of INU.

FIGURE 1. Student Nikoloz Kahiani (Photo from the archive of INU)

The expert on the history of Georgian medicine, Khuta Pachkoria, indicates that in the second year, student Nikolai was assigned the task of preparing drugs.[4] Considering his high interest in anatomy, hard work, and professional skills in the creation of anatomical drugs, Professor N. A. Batuev proposed to Nikolai the position of projector-demonstrator at the Department of Anatomy of the Human INU, where he had

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spent all his free time, and was also involved in the teaching process.[5,6]

In addition, he was interested in topographic anatomy and surgery directly related to anatomy, developed by Professor Nikolai Konstantinovich Lysenkov at the profile department. It should be noted that Professor N.K. Lysenkov's priority was to develop methods of surgical intervention in the cranial cavity, propose one of the theories of brain hernias, and methods of their surgical treatment, as well as perform operations on the skull nerves, among other objectives. (Fig. 2)[7]

FIGURE 2. Several anatomical drawings by student N. Kahiani (housed in the Museum of Human Anatomy at ONMedU)

As a four-year student, Nikolai visited the clinic of the famous surgeon Kirill Mikhailovich Sapeshko.

In 1910, N. Kahiani graduated from INU with honors and was recommended for the position of assistant to N. A. Batuyev at the Department of Human Anatomy. In 1912, he was elected a prosector.[4]

Professor K.K. Vasiliev noted that N. Kahiani worked as a freelancer laboratory assistant,[5] according to the recommendations of professors N. Batuev and N. Lysenkov.[7]

For three years (1911-1913), a young scientist was sent abroad to Egypt to the Department of Anatomy at Cairo University, led by the renowned Professor Bay Vabi. N. Kahiani collected and studied 120 ancient skulls of people who inhabited Egypt. This formed the foundation for a future doctoral thesis. After each scientific trip, N. Kahiani brought exhibits to the Odessa Anatomical Museum.[4]

In early 1914, a tragic event occurred in Odessa when Yambo, the city's beloved elephant, died at George Lorberbaum's zoological center. The animal was suspected of having rabies, and experts decided to euthanize it. "The body of Yambo was laid in the courtyard of the University to prepare and later make a stuffed animal for the museum."[8]

According to some sources, N. Kakhiani performed an autopsy and discovered a brain tumor;4 according to others, rabies was not confirmed, and the elephant was healthy.[8] It is unlikely that a stuffed elephant was made. First, there were a large number (more than 200) of bullets that "riddled" the elephant's body; second, the staff of the Department of Human Anatomy at Odessa National Medical University learned about the elephant from our information; third, there is no such exhibit in any of the museums of the former INU (including Odessa National Mechnikov University for paleontology and zoology, and Odessa National Medical University for normal and pathological anatomy).

In 1914, N. Kakhiani volunteered for World War I. He joined the Russian Red Cross Odessa Kasperovski group as an Ordinator in a mobile field hospital. He gained extensive military surgical experience. He was the head of several hospitals and the chief surgeon of the division. After the war ended, he returned to the Department of Anatomy as an assistant Pathologist.

In 1917, N. Kahiani was elected head of the Department of Normal Anatomy at the Yekaterinoslav Higher Women's Courses, now known as Dnieper State Medical University. His colleagues from the military hospital and the surgical hospital worked with him: M. M. Trostanetsky, E. Ts. Zarembo, B. V. Bulgakov. Among them was Moses Markovich Trostanetsky, a morphologist who graduated from INU in 1911. He studied in Paris and Berlin and worked with N. Kahiani as a resident at the Red Cross Surgical Hospital. From 1917, M. Trostanetsky worked as a pathologist at the Department of Normal Anatomy of the Yekaterinoslav Higher Women's Courses. After this, he headed the Department of Operative Surgery and Topographic Anatomy, and for 18 years, he was the head of the Department of Normal Anatomy at the Dnipropetrovsk Medical Institute. From 1936 to 1947, he served as the rector of this university.[10,11]

The Department was located at the Alekseevsky children's shelter, which required modernization and new equipment for its educational activities. Meanwhile, construction of the morphological building commenced. In addition to lectures and practical lessons, much time was spent on sectional training and acquiring new museum anatomical exhibits. In 1918, the courses became the university medical faculty. For a period, N. Kahiani served as the faculty's dean.

After the University of Tiflis opened, Professor N. Kahiani was elected head of the Department of Histology and Embryology. In October 1919, he became the head of the Department of Surgical Operations and Topographic Anatomy

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at the University of Georgia. In May 1921, he was elected head of the Department of Surgical Pathology, with a propaedeutic clinic located in the Railway Hospital.

N. Kahiani was one of the founders of the Georgian Scientific School of Surgeons. He advanced surgery of the nervous system: he was the first in Georgia to operate on brain tumors, including the procedure of removing a pituitary tumor through the nasal passage, among other techniques.

Professor N. Kahiani published several textbooks on anatomy: "A repeat course of human normal anatomy. Yekaterinoslav, 1918" and "A brief guide to surgical anatomy. Tiflis, 1925."

The railway clinical hospital was named after N.S. Kahiani, the founder of scientific and clinical surgery in Georgia, and a monument was erected on the hospital's grounds in his honor.

Professor Nikolai Saulovich Kahiani left a bright and significant legacy in Georgian medical science. As a distinguished figure and the founder of scientific surgery in Georgia, he was laid to rest in the pantheon of notable individuals in Didube.[12,13]

Simon Kipshidze

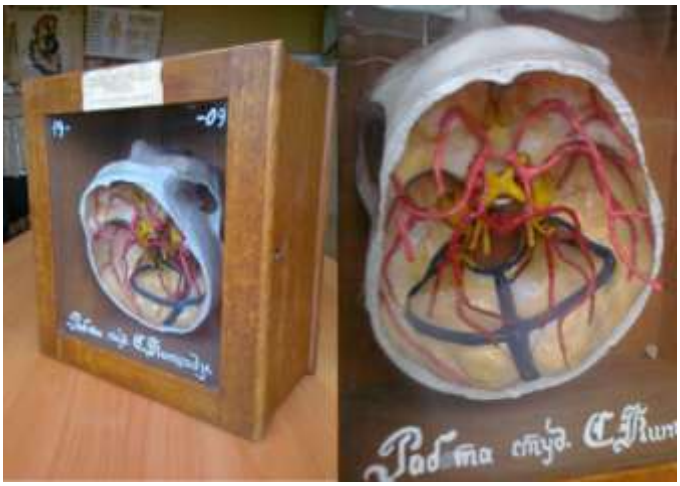
Semen (Simon) Nikiforovich (Nikifor) Kipshidze (5-17.07.1887–03/21/1953).[16] He was born in the Shorapan district of Kutaisi province (now in the Chitaura region of Georgia) to a family of an employee.[14]

After successfully graduating from the Kutaissky real school, he enrolled in the medical faculty of Novorossiysk Imperial University (now Odessa State University) in 1907. He graduated in 1912 and began his career in Odessa (Fig.3).

FIGURE 3. Student Simon Kipshidze. 1907, Odessa (Photo from a personal collection at INU)

Nikolai Batuev, a renowned anatomist, was Simon Kipshidze's teacher. It is said that Nikolai Batuev "especially loved Georgians."[14] Kipshidze's interest centered on the study of the morphology of the nervous system. In his third year, under the guidance of Professor N.A. Batuev developed a unique model of nuclei and conducting brain pathways, which embodies the ideas of academician Vladimir Bekhterev, as noted in the book "Conducting Paths of the Spinal and Brain" (Fig. 4).

FIGURE 4. The work of student S. Kipshidze (1909) is preserved at the Department of Neurology and Neurosurgery at ONMedU



Thanks to the ideas of neurologist N. M. Popov and anatomist N. A. Batuev, a talented student and their follower developed the theoretical foundation of topographic anatomy and neurology by creating three-dimensional material models at the University of Odessa. According to the anatomists, it was "easily visible from all sides" with a "clear idea of topographic and projection relationships" of brain nuclei and tracts.[15]

After graduating from INU between 1912 and 1914, S. Kipshidze worked under the guidance of Professor N. M. Popov, who was affiliated with the clinic of nervous diseases. N. M. Popov noted that S. Kipshidze was "A talented and hardworking person, all his student years worked under the guidance of Prof. Batuyev, studying the anatomy of the nervous system, from the first year, chose nervous diseases as his specialty."[5]

Between 1914 and 1918, he served in the army. He was awarded the orders of St. Stanislav, 3rd class with swords and bow (1916), and St. Anna, 3rd class with swords and bow (1916). In 1918-1919, he returned to the clinic as a resident.[16]

In 1919, he relocated to Tbilisi. That same year, he was appointed head of the Neurological Department at the Tbilisi Railway Hospital and served in this role for five years.[4,14]

At the same time, after the Department of Nervous Diseases was established in 1920, he was appointed as a senior

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assistant to the esteemed Professor Yakov Afanasyevich Anfimov (Fig.5). S. Kipshidze was the only young doctor's assistant with experience in neurology. Peter Sarajishvili and Peter Kavtaradze, who graduated from INU a few years later, became well-known neurologists. Young doctors trained at the clinical base in Mikhail's (Republican) Hospital under S. Kipshidze's guidance.[14]

FIGURE 5. The staff of the Department of Nervous Diseases at Tbilisi University. Sitting from left to right: to the left of P. Kavtaradze are S. Kipshidze, G. Grigolashvili, and O. Zanguridze-Sereda. Standing from left to right: P. Zhvania, A. Rukadze, M. Parkadze

His interest in the anatomy and physiology of the nervous system persisted through collaboration with a physiologist, a colleague at the University of Odessa, and later with Academician Ivan Beritashvili of the Academy of Sciences of Georgia and the USSR. Additionally, Alexander Natishvili was an Academician of the Academy of Sciences of Georgia. Both scientists studied neurons, neurophysiology, and the morphology of the central nervous system, and they were close friends with S. Kipshidze. In the physiology textbook published by Beritashvili in 1920, the chapter on the cerebellum is authored by Simon Kipshidze.[17]

Under the leadership of Professor Ya. A. Anfimov, S. Kipshidze's doctoral dissertation was defended in 1924. "Materials for the pathology of the small brain." It should be noted that Simon's dissertation was the second in Georgia in the field of medicine.[14]

In 1925, Honored Professor Ya. A. Anfimov requested that the Scientific Council of the University of Tbilisi select S. N. Kipshidze as the department head. The Council approved the request, and Simon Nikiforovich led the department until his death.

In 1924-1925, Professor S. N. Kipshidze traveled to the leading centers of neurology in Germany and France. He trained at Jean-Martin Charcot's clinic and presented a report in French at a conference honoring the 100th anniversary of this notable psychoneurologist's birth.[14]

S. Kipshidze examined the organization and technical setup of several clinics he visited. Simon Nikiforovich received a commemorative medal from Sharko, established business relations with Joseph Babinsky, and Henri Charles Claude (Fig.6).[14]

FIGURE 6. Medal honoring J. M. Sharko (Author: Frédéric Charles V. De Vernon), stored at the Museum of the History of Georgian Medicine, Tbilisi, Georgia

After returning from Paris, Simon organized the clinic to meet international standards, equipped with a laboratory and electrophysiological research tools, and implemented methods for studying cerebrospinal fluid.[14]

At the beginning of neurology's development in Georgia, Professor S. Kipshidze created the first comprehensive guide to nervous disease symptoms in the Georgian language, published in three volumes, which remains relevant today. He made significant contributions to the development of medical terminology. His collection of clinical lectures, published in Russian in 1947, was widely used throughout the Soviet Union.

In 1930, S. Kipshidze founded and led the Society of Neuropathologists and Psychiatrists of Georgia.

The Georgian anatomists continued the work that S. Kipshidze began at the INU on modeling nuclei, trains, and other brain structures. Building on the experience of creating models of the nervous system and with the author's permission, Professor Semyon Nikiforovich Kipshidze improved and developed more than nine models. These models gained worldwide recognition, and the production by the workshop at Medialstructures, a facility of the Ministry of Health of the Georgian SSR, was successfully established (Fig.7).

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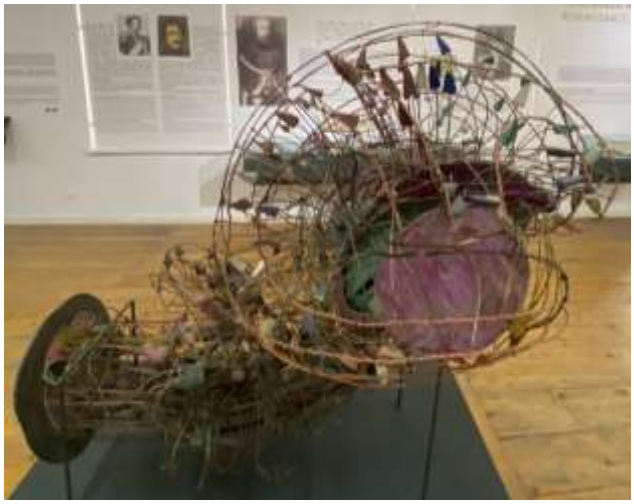
FIGURE 7. A replica of the brain pathway model is housed in the Museum of the History of Georgian Medicine, Tbilisi, Georgia



S. Kipshidze also aimed to establish a neurosurgery service in Georgia. To do this, he sent Bondo Chikovani to Leningrad to study neurosurgery under Professor Alexei Molotkov, and Shalva Kipshidze to Moscow to learn from Professor Nikolai Burdenko.[14]

During World War II, he headed the neurological department of the Transcaucasian Military District. In 1944, he was awarded the title of Honored Scientist. He passed away on March 21, 1953, at the age of 66.[14]

CONCLUSIONS

Thus, Professor Nikolai Saulovich Kahiani and Simon Nikiforovich Kipshidze, natives of INU, were students of the renowned Odessa scientists N. A. Batuev and M. M. Popov, who achieved notable successes at their Alma Mater. They were the founders. They left a lasting and profound impact on medical science. The first is a prominent figure - a morphologist and the founder of scientific surgery in Georgia. The second is the founder of Georgian neurology and neurosurgery, who established the Society of Neurologists and the hospital where he worked; streets were named after him.

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