

REVIEW



Prof. dr Đorđe Joannović, a corresponding member of Serbian Royal Academy, Dean, pathologist and the first Serbian oncologist, one of the world pioneers of the study of autoaggression, the founder and builder of the Institute of Pathology, the most tragic personality in the one-century-long history of the Faculty of Medicine (151 years since birth and 90 years since death)

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Summary

Đ. Joannović's greatest scientific achievements, in addition to his participation in the discovery of autoaggression in medicine, were in the field of experimental oncology and pathological morphology of tumors. He was the first oncologist-scientist in Serbia.

Đ. Joannović's death occurred in the night following the incident and humiliation experienced in Petar Živković's cabinet. It was certainly a big emotional blow, a disappointment, and shock for Đj. J. Like old Serbs who used to die for their honor, he committed suicide.

Keywords: Faculty of Medicine, Institute of Pathology, Đorđe Joannović, University of Belgrade



FAMILY BACKGROUND, BIRTH AND LIFE OF ĐORĐE JOANNOVIĆ IN VIENNA 1871-1920.

The family comes from Metohija from where they first moved to the village of Beodra (today a settlement within Novo Miloševo) at Banat district and then to Vienna. Father Hariton was a lawyer and a senator, and he managed the estate of the Viennese baron Sina. Mother Marija's maiden name was Vlahović. The elder brother Simeon was born in 1869. He was engaged in consular affairs and it is him Đorđe Joannović (Đ. J.) was very attached to. Simeon lived in Beodra while Đ. J. was in Belgrade (1-4, 8, 15).

Đ. Joannović was born on June 16, 1871 in Vienna. Đorđe and Simeon were brought up in the spirit of the old Serbian tradition. They had talent for music – Đorđe played the violin and Simeon played the piano. Đ. J. had never got married and had no children. He believed that "science was asking for the whole person". Z. Levental, a cardiologist and internist from Belgrade, the author of the text on Đ. J. in Yugoslav Medical Encyclopedia published in Zagreb, especially researched Đ. J.'s social life. He claims that he has reliable evidence that Đ. J. loved women. Đ. J. lived in one room in his Institute of Pathology.

Đorđe Joannović was a "typical boy born in Vienna". This is where he completed his primary and secondary school and the Faculty of Medicine. He was promoted to a doctor of general medicine on July 1, 1895, at the age of 24. He got a job at the Institute of Pathology of the Faculty of Medicine in Vienna. In 1896 he became a lecturer, and then an assistant professor in 1904, an associate professor in 1910, and a full professor in 1919. At that time, Vienna was one of the centers of world medicine, along with Paris, Berlin, London, Padua, Budapest and St. Petersburg. Đ. J. was a Serb with the highest university title in the world at the time (Figure 1).

Oncology and pathology in Vienna were on the highest possible scientific level. They had a famous pathologist Karl von Rokitansky (1804-1878) who held the humoral direction in pathology, in contrast to Rudolf Virchow in Berlin, who advocated cellular pathology. Rokitansky was the rector of the University of Vienna and the president of the Austrian Academy of Sciences. He performed about 30,000 autopsies!

His student and successor Richard Paltauf (1858 – 1924) was Pasteur and Koch's student. He was Joannović's superior, who collaborated with him from 1895 to 1920. Richard Paltauf, Karl Sternberg and Đ. J. established the recognized "Vienna School of Experimental Oncology". Đ. J. also collaborated with Pick, Paltauf's student, in his scientific papers, as well as with the famous German pathologist Karl Aschoff. (16, 20)



Figure 1. Djordje Joannović from his younger days with a signature (Figure courtesy of Dr Nada Kovačev Šljapić, professor of pathology at the Faculty of Medicine in Novi Sad, Đ. J.'s cousin).

Đ. J. knew the Nobel laureates Paul Ehrlich, well-known as a researcher of humoral immunity and the inventor of Salvarzan and Neosalvarzan (anti-syphilis drugs), and Ilya Ilyich Mechnikov, who discovered phagocytosis.¹ He also greatly appreciated the Serbian academician Vladan Đorđević, and he wrote about his honorary PhD thesis and was the author of his obituary when he died.

Đ. J. could have taken over the institutes and chairs of pathology in Innsbruck and Prague from Vienna. He even had invitations to come to the USA. Because of his noble patriotism, and a wish to help Serbia and Serbian people, he accepted the invitation to come to Belgrade at the age of 49. Also, he could have succeeded his teacher Paltauf who died in 1925, but he decided not to return to Vienna.

Đ. JOANNOVIĆ'S ARRIVAL IN BELGRADE (1920). THE ESTABLISHMENT OF THE FACULTY OF MEDICINE THE UNIVERSITY OF BELGRADE (1920). THE CONSTRUCTION OF THE INSTITUTE OF PATHOLOGY (1926)

Following the end of the First World War, Vojislav Subotić (1859-1923) (surgeon), Milan Jovanović - Batut (1847-1940) (hygienist) and Drago Perović (a Serbian

¹When talking about the results of Tsar Nicholas II Romanov's reign, White Russian emphasized that during his time Russia had the first two Nobel laureates: Ilya Ilyich Mechnikov in Paris and Ivan Pavlov in St. Petersburg (he discovered conditioned reflexes and dealt with higher nervous activity). After their death, he also wrote obituaries about them.

professor of anatomy at the Faculty of Medicine in Zagreb) were supposed to establish the Faculty of Medicine in Belgrade. However, Prof. Drago Perović soon withdrew due to illness.

The first two members of the triumvirate then invited Đ. J., a full professor of pathology at the Faculty of Medicine in Vienna to come to Belgrade. He accepted the invitation, so in 1920, the Faculty of Medicine of the University of Belgrade was founded (Figure 2).



Figure 2. The Triumvirate that finally founded the School of Medicine University of Belgrade in 1920. From left to right: Prof Vojislav Subotić (surgeon), Milan Jovanović – Batut (hygienist) and Djordje Joannović (pathologist and oncologist).

Đ. J. founded the Institute of Pathology and the Department of Pathology in 1922, where he was the first headmaster or director. He gave his first lecture to students in 1923. He was the most popular professor both among students and among his colleagues. After a pro-

fessional trip around the world in order to get to know various institutes of pathology, Đ. J. established the Institute of Pathology in 1926 (Figure 3).

His associates were: Dimitrije Tihomirov (initially the only assistant, who after World War II went to New York, USA), teachers Ksenofon Šahović (his successor as the director of the Institute, later an academician of SASA), Marija Višnjić Frajnd and Živojin Ignjačev. The following associates stayed at the Institute for a short time: Dragoslav Miletić (later professor of pathology in Skopje and Priština), Meljnikov, K. Putilin, D. Stanulov, Mileta Magarašević, Vladimir Spužić (later the dean and an academician of SASA), Aleksandar Simić, Sveta Dimitrijević and others (5, 9, 18).

Đ. J. was the dean of the newly founded Faculty of Medicine in Belgrade for four years (1922/23, 1925/26, 1927/28 and 1928/29) and a vice dean for three years (1923/24, 1926/27, 1929/30) (32-34).

As Đ. J. came to Serbia from the defeated Austria-Hungary, many professors from victorious France and England, the so-called “Serbian current” (professors Milovanović, Antić, Kostić and others), caused certain difficulties for him in his work. (25, 26, 51)

ĐORĐE JOANNOVIĆ’S NUMEROUS SOCIAL AND MEDICAL FUNCTIONS OUTSIDE THE FACULTY OF MEDICINE AND THE INSTITUTE OF PATHOLOGY

In addition to major responsibilities at the Dean’s Office of the Faculty of Medicine and the Institute of Pathology (i.e. extensive student teaching, education of younger associates, scientific development in the fields of experimental oncology and pathology), Đ. Joannović had numerous other functions (21, 22, 27, 39, 47):

- the founder and the first president (until his death in 1932) (Figure 4) of the Yugoslav Society for the Fight against Cancer (September 27, 1927 in Belgrade) - the



Fig. 3. Institute of Pathology “Prof. Djordje Joannović” of the Faculty of Medicine University of Belgrade. Founded by Đ. J. in 1926.

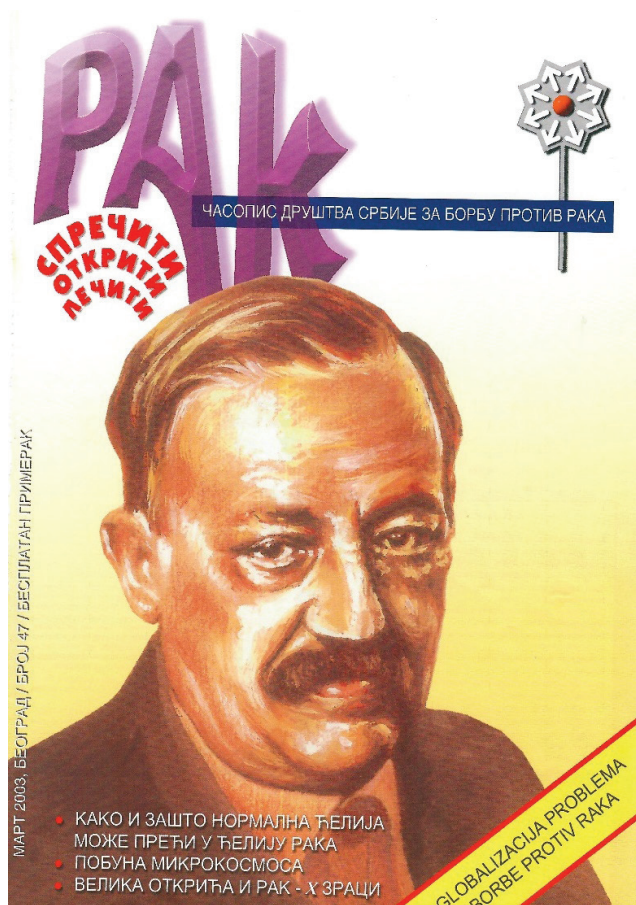


Figure 4. The front page of the 47th issue of the journal “Cancer” published by the Serbian Society for the Fight Against Cancer from 2003. The picture was made according to Đ. Joannović’s photo at an older age

fourth society of this type in the world. The first society was created in 1910 in Vienna; the second in 1917 in Washington; the third in 1920 in Paris. The Yugoslav Society was under the protection of King Alexander I Karađorđević, with its headquarters in Belgrade in the newly built Institute of Pathology. The General Secretary of the Society was Ksenofon Šahović;

- Đ. J. had an idea to build the Central Institute of Oncology in Belgrade. Its construction began in 1939 under the protection of Queen Marija and Princ Pavle as the main donor²;
- lifetime Honorary President of the Association of Yugoslav Students of Medicine and the president of the Humanitarian Aid Fund intended for poor students;
- president of the Serbian Medical Society and its journal Serbian Archives of Medicine 1924/1925 (35-37);
- one of the founders of the international journal Medicinski pregled;
- a contract military doctor and the first medicolegal examiner of the Military Hospital in Belgrade starting from 1920 (45, 46);
- honorary member of Matica Srpska in Novi Sad;

- member of various international medical organizations; he represented Serbia and Yugoslavia at numerous medical congresses in Europe and the USA;
- corresponding member of the Serbian Royal Academy (predecessor of SASA) since February 18, 1926 (13, 35).

Đ. JOANNOVIĆ’S CONTRIBUTION TO EXPERIMENTAL ONCOLOGY AND PATHOLOGICAL MORPHOLOGY OF TUMORS

Đ. Joannović’s greatest scientific achievements, in addition to his participation in the discovery of autoaggression in medicine, were in the field of experimental oncology and pathological morphology of tumors. He was the first oncologist-scientist in Serbia.

In the field of pathological morphology of tumors, a German pathologist Prof. Rudolf Virchow (1821-1902) (48, 49), the author of the revolutionary book “Cellular Pathology” in 1858 and the “father of pathological anatomy”, had already achieved great success. (7, 12).

Virchow discovered leukemias: myeloid leukimia (with enlarged spleen) and lymphoid leukimia (with enlarged lymph nodes). He distinguished them from leukocytosis and pyemia. He noticed the local occurrence of cancer and the occurrence of local and distant secondary tumor nodes - metastases. Moreover, he noticed that sarcomas spread hematogenously (he noted pulmonary metastases without the involvement of pulmonary lymph nodes). Enlarged left supraclavicular lymph node is named after him as a site of metastasis of the stomach and ovarian cancer. He described psamoma (Virchow’s tumor). He specified the terminology of certain tumors according to histogenesis: myxoma, myoma, myosarcoma, angioma, lymphangioma, neuroglioma, teratoma, etc.

Đ. Joannović investigated branchiogenic carcinoma (originating from remnants of gill arches), cystic tumors of the neck, calcification and ossification of skin atheroma, the formation of a tumor due to irritation, the multicentric origin of a tumor in an organ, etc.

In experimental oncology, he investigated tumor growth in vivo and in vitro (in tumor tissue cultures). He observed that tumor growth was promoted by the following: castration, splenectomy, rice in the diet. Toluylendiamine intoxication, small doses of morphine, cocaine and quinine, and oats in the diet slowed it down.

He carried out immunological cancer therapy using fermentative extracts from tumor tissue (tumor tissue scraps) from patients themselves.

As indicators of successful immunological treatment of cancer in experimental animals, he marked the following: histopathological finding of lymphectasia, accumulation of plasma cells, and proliferation of connective tis-

²Today, in 2022, the director of the Institute of Oncology in Belgrade, Prof. Danica Grujičić, is fighting for a new building for the Institute because of its ever growing needs.

sue with sequestration of groups of cancer cells and their degeneration (13, 29).

Bearing in mind that cancer could be destroyed when erysipelas occurred over skin cancer, Đ.J. by analogy, used bee venom in cancer therapy. He also researched the effects of radiothorium on cancer.

UNDERSTANDING THE ETIO-PATHOGENESIS OF CANCER BY Đ. JOANNOVIĆ COMPARED WITH CURRENT (2022) KNOWLEDGE

Đ. Joannović believed that the following three things were important in the etio-pathogenesis of cancer: disposition, local changes, and general metabolic disorders. Apart from this, “chronic irritations”, the presence of scattered embryonic cells in tissues where they did not normally belong, and the age of the patient were also of some importance. Of course, these last three factors do not always result in cancer (24, 28, 31).

Cancerology has progressed remarkably since the time of Đ. Joannović. Some essential things concerning the etio-pathogenesis of cancer have been discovered, which promises that cancer will be defeated in the 21st century. The figure which shows that 23% of all deaths are accounted for by cancer will disappear.

Today we know that cancer is a disease of the genes of the individual cell. Mutagenic factors (carcinogenic chemicals, ionizing radiation, oncogenic viruses) lead to mutations of normal cellular genes: proto-oncogenes or tumor suppressor genes (important for cell differentiation and division). Executive proteins, encoded by mutated - cancer genes, change about 100 characteristics of a normal cell.

Cancer cells become immortal. The basis for their immortality includes the following:

1. Action of telomerase enzyme on chromosomal telomeres (“caps” at the ends of chromosomes, which preserve their integrity) preventing their shortening after cell division. When telomeres critically shorten, the cells enter in senium and die. Cancer cells still have the enzyme telomerase, which normal cells have lost during early life;
2. Absence of apoptosis (programmed cell death – “suicide”). Namely, the cells already have a built-in system of caspase enzymes, and when they receive a “molecule of death” from the organism, these enzymes cut the DNA of the cells. In this way excessed and damaged cells of the organism are removed. The process of killing cells is carried out silently, cell remains are phagocytosed and everything passes without an inflammatory reaction and fibrosis. Cancer cells, therefore, do not undergo apoptosis.

The initial cancer cells have to break through the normal “immunological surveillance”. Then, there is favoring one cancer cell clone, which shows uncontrolled

proliferation and invasion of the surrounding normal tissue with its destruction (infiltrative - destructive local growth).

Then, certain cancer cells show a potential to metastasize, i.e., through lymphatic, hematogenous and in other ways, they go to the distant parts of the body, creating secondary cancer nodes, i.e. metastases.

Finally, the so-called “cancer disease of the organism” seems to lead to cachexia - emaciation when the organism is literally skin-and-bones.

Today, in addition to surgical, radiation and chemotherapy, there are also successful attempts of immunotherapy based on prior knowledge of the genetic characteristics of cancer cells and the organism.

Đ. JOANNOVIĆ'S PAPERS ON GENERAL AND SPECIAL PATHOLOGICAL MORPHOLOGY

With his first paper “On the origin of plasmocytes” Đ. J. attracted the attention of the international scientific community. At the time, nothing was known about the origin of plasmocytes. Đ. J. concluded that plasmocytes arose from lymphocytes (adventitial and degenerated). Many years later, scientists know that they arise from B lymphocytes and that they create antibodies, i.e., participate in humoral immunity.

Đ. Joannović investigated the staining of microorganisms in pathological tissues. He dealt with liver diseases. As an assistant, he participated in the Competition in research of the pathogenesis of icterus and his paper (book) was awarded by the Belgian Royal Academy of Medicine. Some of his experimental research on icterus (“toluylendiamine icterus” disappears after splenectomy) became the basis of today's therapy of hemolytic anemias by splenectomy.

He dealt experimentally and postmortem with pathological morphology of tetanus as well as its prophylaxis. He also investigated anaphylactic shock, problems of transplantation and explantation (tissue culture), and nutrition pathology.

PAPERS BY Đ. JOANNOVIĆ (GEORGES JOANNOVIC) WRITTEN IN VIENNA IN GERMAN AND FRENCH BEFORE HIS ARRIVAL IN BELGRADE IN 1920

1. *Joannovics G. Über das Vorkommen, die Bedeutung und Herkunft der Unnaschen Plasmazellen bei verschiedenen pathologischen Prozessen. Zeitschr. f. Heilkunde, 1899; 20: 159.*
2. *Joannovics G. Über branchiogene Carcinome und auf embryonale Anlage zurückzuführende cystische Tumoren des Halses. Zeitschrift für Heilkunde, 1902; 23, I.*
3. *Joannovits G. (ASSISTANT A L'INSTITUT DE PATHOLOGIE GÉNÉRALE ET EXPÉRIMENTALE DE LA FACULTÉ DE MÉDECINE DE VIENNE (AUTRICHE). Recherches expérimentales sur la pathogénie*

de l'ictère. BRUXELLES, HAYEZ, IMPRIMEUR DE L'ACADÉMIE ROYALE DE MÉDECINE DE BELGIQUE. 1903; pp 1 – 61. Memmoires couronné par l'Académie Royale de Médecine de Belgique.

4. Joannovics G. Über experimentelle Leberzirrhose. Wiener klin. Wochenschrift 1904; 17: 757-62.
5. Joannovics G. Die Ergebnisse der experimentellen Krebsforschung. Wiener klin. Wochenschrift 1908; 21: 7-11.
6. Joannovics G. Die Cytotoxine. Zeitschrift für Immunitätsforschung und exp. Therapie, 1909; 2 :197.
7. Joannovics G. Über das Hepatotoxin. Wiener klin. Wochenschrift 1909; 22: 228 - 31.
8. Joannovics G. Über hämolytisch wirkende, freie Fettsäuren der Leber bei akuter gelber Atrophie und Phosphorvergiftung (mit P.Pick). Berliner Klinische Wochenschrift, 1910; 47: 928 – 30.
9. Joannovics G. Beitrag zur intravaskulären Transplantation. Wiener klinische Wochenschrift, 1911; 24: 698 – 9.
10. Joannovics G. Intravitale Oxydations hemmung in der Leber durch Narkotika (mit E. Pick). Pflügers Archif für die gesamte Physiologie des Menschen un Tiere, 1911; 140: 327 – 53.
11. Joannovics G. Über das Verhalten transplantiertes Karzinome in künstlich anämischen Mäusen. Wiener klin. Wochenschrift 1912; 25:37-9.
12. Joannovics G. Ueber das Verhalten transplantiertes Karzinome in künstlich anämischen Mäusen. Wiener klin. Wochenschrift 1912; 25:37- 9.
13. Joannovics G. Beiträage zur künstlichen Kultur menschlicher tumoren. Wiener klin. Wochenschrift 1913; 26: 781 – 3.
14. Joannovics G. Paul Ehrlich, 1854-1915. Wiener klin. Wochenschrift 1915; 35:937-42.
15. Joannovics G. Experimentelle Studien zur Frage der Geschwulst-Disposition. Wiener klin. Wochenschrift 1916; 29: 345-9.
16. Joannovics G. Elias Metchnikow. Neue Freie Presse, 18. 07. 1916, 11-12.
17. Joannovics G. Über das Wachstum der transplantablen Mäusetumoren in kastrierten und epinephrektomierten Tieren. Beiträge zur pathologischen Anatomie und Physiologie, 1916; 62:194.
18. Joannovics G. Zum anaphylaktischen Schock im Verlaufe der Tetanusbehandlung. Bruns Beiträge zur klinische Chirurgie, 1917:105.
19. Joannovics G. Zur Wirkung fermentativ gewonnener Spaltungsprodukte aus Geweben und Bakterien ("Ефекат добијен ферментацијом распадних продуката ткива и бактерија"). Wiener klin. Wochenschrift, 1920.; XXXIII (30):649-52 .
20. Joannovics G. Reizgeschwülste. Wiener klin. Wochenschrift 1923; 2:23015.

PAPERS BY Đ. JOANNOVIĆ WRITTEN IN VIENNA IN SERBIAN, GERMAN AND FRENCH BEFORE HIS ARRIVAL IN BELGRADE IN 1920 AND AFTER HIS ARRIVAL IN BELGRADE (1920 – 1932)

1. Јоанновић Ђ. (у оригиналу погрешно стоји: Јовановић). Нови погледи на постанак и лечење извесних болести. Експерименталне студије (*New views on the origin and treatment of certain diseases. Experimental studies*). Српски архив за целокупно лекарство, новембар и децембар 1920; XXII (11-12); 445 – 55.
2. Joannovics G. Reizgeschwülste. Wiener klin. Wochenschr., 1923; 2 :230-5.
3. Јоанновић Ђ. (У оригиналу погрешно стоји Јовановић). Рак и малигне неоплазме (*Cancer and malignant neoplasms*). Медицинска библиотека (уредник А.Ђ. Костић). Изд. Књижарница "Напредак". Београд, 1924.
4. Јоанновић Ђ. Однос између узрока болести и процеса оздрављења (*The relationship between the cause of illness and the healing process*). Предавање приликом свечаног отварања Патолошког института у Београду, на дан 22.ајрила 1926. године. Београд, Загреб, Љубљана, Софија: Медицински преглед 1926; 1: 2-5. (Први чланак у првом броју интернационалног Медицинског прегледа).
5. Јоанновић Ђ. Théophile-René Laennec као патолошки анатом (*Théophile-René Laennec as a pathological anatomist*). Медицински преглед (Београд) 1926 – 27., стр. 136 – 39.
6. Јоанновић Ђ. Почасни докторат д-ра Владана Ђорђевића (*Honorary PhD thesis of Vladan Djordjević, MD*). Српски архив за целокупно лекарство 1927., 211-3.
7. Јоанновић Ђ. О патологији исхране (*About the pathology of nutrition*). Српски архив 1927; 22: 801 – 12.
8. Yoannovitch G. (Joannović Djordje): *L'institut de pathologie générale et d'anatomie pathologique à Belgrade. Methods and problems of medical education (Eighteenth series). The Rockefeller Foundation. New York, N.Y., U.S.A., 1930: pp. 139-51.*
9. Joannovics G. Über die Wirkung des intravenös eingeführten Radiothorium. Verh.d. Deutsch. patholog. Gesellschaft, 1930: 25.
10. Joannovics G. Dr. Vladan Georgevitch. Wiener klin. Wochenschrift 1930:42: 1296-7.
11. Јоанновић Ђ. О животу и раду др Владана Ђорђевића (*About the life and work of Vladan Djordjević, MD*). Српски архив за целокупно лекарство 1931., 2: 155 – 63.

TWO PIONEER PAPERS BY Đ. JOANNOVIĆ WRITTEN IN VIENNA AND BELGRADE IN 1920 ESTABLISHING WORLDWIDE LEARNING ABOUT AUTOAGGRESSION IN MEDICINE

In the last third of the 19th century, medicine was dominated by the dogma “The human organism never creates substances against itself”. The dogma was particularly advocated by the Nobel laureate Paul Erlich (1854-1915) (40), an immunologist. By analogy with vaccination, he wanted to induce immunity against cancer by injecting weakened cancer cells into the patient. He also researched autoaggression, but rejected the possibility that the body’s immune system attacked healthy tissues of the human body. He called it “Horror antitoxicum” = “fear of antitoxin”. Silverstein (44) spoke of need for recognition: autoimmunity versus “Horror antitoxicum” (4, 13).

William B. Coley is considered the be the “father of tumor immunotherapy”: in 1893, he used bacteria and bacterial lysates in the treatment of tumors. Ehrlich’s student Ernest Witebsky (43) demonstrated that chronic thyroiditis was caused by autoimmunization. Pfeiffer and Merrill (42) confirmed that autoantibodies played a role in the pathogenesis of diffuse glomerulonephritis.

Đ. J. noted that soldiers with head surgeries and brain injuries from firearms sometimes had severe headaches and died. At their autopsies, numerous foci of softened brain tissue (encephalomalacia) were discovered, both near and far from the healed brain injuries.

He also investigated this experimentally in three groups of white rats. In the first group, he traumatized rats’ heads and brains with frequent blows to the head. Rats in the second and third group were injected parenterally at the beginning of the traumatization and whole time respectively with rat brain tissue emulsion. He obtained the same necropsy findings in all the groups of white rats. Based on these observations in humans and animals, he phenomenally concluded the following:

“The same elements of the brain, which as a result of trauma are the source of decay products, are later susceptible to the activity of these decay products”.

Today it is clear that decay products of the brain stimulate our immune system to create autoantibodies against them, but also against such substances (antigens) in healthy brain cells. This then leads to new foci of brain softening (28, 29).

Đ. J. tried to apply this newly discovered original etio-pathogenetic concept to the therapy of certain diseases – superficial carcinoma of the skin in humans and tuberculous granulomas in guinea pigs. He injected disintegrated cancerous or granulomatous tissue (the products of their “dissolution”) or digested Koch bacilli under the skin of the same people or guinea pigs.

In tuberculous granulomas, he observed an increase in phagocytosis of Koch bacilli in granuloma cells, which then facilitates repairing processes.

Đ. J. even had his own drug “Joannin” (38) - the old tuberculin for treating tuberculosis.

Also, he treated dermatoses: Trichophyton tonsurans with its “flakes” as well as psoriasis with its squamas (40, 41, 43). He wrote two important original papers where he described research in humans and animals:

1. Joannovics G. *Zur Wirkung fermentativ gewontern Spaltungsprodukte aus Geweben und Bakterien. Wiener klin. Wochenschrift 1920.; XXXIII (30): 649-52. “On the influence of decomposition products obtained from tissues and bacteria by fermentation”.* (Figure 5).
2. Joannović Dj. (in the original it is written incorrectly: Jovanović). *New views on the origin and treatment of certain diseases. Experimental studies. Serbian archive for all medicine, November and December 1920; XXII (11-12); 445 – 55* (Figure 6). The papers were printed in Serbian with an error in the author’s name, i.e., instead of Đ. Joannović it was written Đ. Jovanović (which, by the way, often happens, as proofreaders change the surname believing the original one is a mistake, as it is a rare surname; this is why they must be warned not to do that). Also, the title of the paper is general and unattractive, so it did not arouse the attention of readers. The authors of this paper about Đ. J. knew that these papers by Đ. Joannović existed but, due to the above-mentioned circumstances, it was difficult to find them while browsing the volumes of the Serbian Archives.

These two cited papers on autoaggression are the most important scientific discoveries of Đ. Joannović. Because of them, he is one of the pioneers of the world study of autoaggression, together with Noel Fissenger, M. Massugi (41) and others.

Noel Fissenger stated that a snake could have autoantibodies against its own venom after a self-bite. Also, he stated that animals and humans could produce autoantibodies against their own sperm. In both cases, however, these are products that are normally excreted from the body. For him, liver cirrhosis is also an autoaggressive disease.

M. Massugi (41) believed that autoaggression was involved in the pathogenesis of glomerulonephritis and liver diseases.

Today we have many other proofs that autoaggression and autoimmune diseases exist. We know of apoptosis. In case of autoaggression, the autoimmune bodies created on decay products (“debris”) in the body act on diseased tissue as well as on healthy tissue that has antigens as damaged tissue.

We treat their sources of decomposition with products of tissue decay, i.e., damaged tissue but damaging healthy tissue as well. It is like the Latin proverb “Clavus clavo eicere” says (“One nail drives out another”) (V. Kanjuh).

Levental (28, 29) described Đ. J.’s process of autoaggression as follows: “Đ. Joannović discovered the phenomenon of sensitivity of tissues and cells to their own

Wiener klinische Wochenschrift

Begründet von weil. Hofrat Prof. H. v. Bamberger

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INHALT:

1. Originalartikel: 1. Aus dem Institute für allgemeine und experimentelle Pathologie in Wien (Vorstand: Hofrat Professor Dr. R. Paltauf) und dem pathologisch-anatomischen Institute der Allgemeinen Poliklinik in Wien (Vorstand: Professor Dr. G. Joannovic). Zur Wirkung fermentativ gewonnener Spaltungsprodukte aus Geweben und Bakterien. Von Professor Doktor G. Joannovic. S. 649.
2. Aus der Universitätsklinik für Dermatologie und Syphilidologie in Wien. (Vorstand: Hofrat Prof. Dr. G. Riehl.) Ueber die therapeutische Wirksamkeit eines durch Verdauung von Triebphytonkulturen gewonnenen Präparates (Joannovic). Von Dr. Herbert Fuchs. S. 653.
3. Zur Wirkung fermentativ gewonnener Spaltungsprodukte auf Karzinome. Von Primarius Dr. G. Scherber, Wien. S. 654.
4. Aus dem Hygienischen Institut der deutschen Universität in Prag. Ueber die Bedingungen der Agglutininbildung durch Fleckfiebervirus. Von E. Weil und A. Felix. S. 655.
5. Aus der chirurgischen Universitätsklinik in Wien. (Vorstand: Hofrat Prof. Dr. Julius Hochenegg.) Ueber eine Modifikation der Schloßerschen Operationsmethode für eine häufige Form der Phimose. Von Dr. Franz Kazda. S. 657.
- II. Referate: Die Oedemkrankheit. Von Dr. Siegmund Pollag. — Wiener Archiv für innere Medizin. Unter Mitwirkung zahlreicher Mitarbeiter geleitet von W. Falta und K. F. Wenkebach. — Beiträge zur Schilddrüsenfrage. Von Dr. med. Otto Bayard. Ref.: J. Bauer.
- III. Aus verschiedenen Zeitschriften.
- IV. Vermischte Nachrichten.
- V. Verhandlungen ärztlicher Gesellschaften und Kongreßberichte.

Aus dem Institute für allgemeine und experimentelle Pathologie in Wien (Vorstand: Hofrat Prof. Dr. R. Paltauf) und dem pathologisch-anatomischen Institute der Allgemeinen Poliklinik in Wien (Vorstand: Professor-Doktor G. Joannovic).

Zur Wirkung fermentativ gewonnener Spaltungsprodukte aus Geweben und Bakterien.*)

Von Prof. Dr. G. Joannovic.

Während des Krieges hatte ich Gelegenheit, wiederholt Fälle von Kopfschüssen zu obduzieren, welche ein eigenförmliches, nicht ohne weiteres zu deutendes pathologisch-anatomisches Bild darboten. Es handelte sich um Schußverletzungen des Schädels mit Läsion des Gehirns, deren Träger nach sachgemäßer, chirurgischer Behandlung geheilt in die Heimat entlassen wurden, nach Wochen, Monaten, mitunter auch nach Ablauf von Jahresfrist, unter heftigsten Kopfschmerzen erkrankt in die Krankenanstalt zurückkehrten. Die rapide Zunahme der zerebralen Krankheitserscheinungen drängte zu einem neuerlichen operativen Eingriff. Nach Eröffnung des Schädels fandete man vergeblich nach einem Abszeß, der sich auch bei der Obduktion nicht fand. Die Sektion des Gehirns deckte dagegen multiple, zum Teil auch ausgelehntere Erweichungsherde auf, die nicht allein in der nächsten Umgebung der Schußverletzung, sondern auch weit entfernt davon gelegen waren. Für diesen Befund fehlt bisher eine ausreichende Erklärung.

Ich suchte mir eine solche in der Weise zurecht zu legen, daß durch die Resorption von zertrümmertem Hirngewebe im Organismus Substanzen gebildet werden, welche zytotoxisch oder fermentativ abbauend auf lädiertes Gehirngewebe schädigend einwirken. Solche von klinischen Symptomen kaum begleitete Läsionen des Gehirns können zweifellos nebar und entfernt von der groben traumatischen ganz regelmäßig vor und sind jenen gleich zu stellen, wie sie der Gehirnerschütterung zukommen. An diesen durch die Commotio geschädigten Anteilen des Zentral-

*) Vortrag, gehalten in der Ges. d. Aerzte in Wien am 25. Juni 1920. — Die Arbeit wurde mit Unterstützung der österreichischen Gesell-

nervensystems greifen die in Rede stehenden Substanzen an. Der Wirkung solcher spezifischer Reaktionsprodukte wären demnach die geschädelerten multiplen Späterweichungsherde des Gehirns zuzuschreiben, die sich auf dem Boden ganz geringfügiger Kompressionsläsionen entwickeln würden. Es galt nun die Richtigkeit dieser Deutung durch das Tierexperiment zu prüfen.

Gehirnerschütterungen lassen sich beim Tiere durch Verhämmerung des Kopfes unschwer erzeugen. Kombiniert man diesen Versuch mit einer einmaligen oder wiederholten Injektion von Gehirnbrei, so lassen sich im Tierversuche willkürlich jene Verhältnisse schaffen, welche nach der entwickelten Auffassung beim Menschen zu multipler Erweichung des Gehirns führen sollen. Als Versuchstiere dienten mir Ratten, mit denen in Gruppen zu zwölf folgende Serienexperimente unternommen wurden:

1. Wiederholte Verhämmerung des Schädels ohne Injektion von Gehirnbreiemulsion.

2. Wiederholte Verhämmerung des Schädels, kombiniert mit einer einmaligen, intraperitonealen Injektion von Gehirnbreiemulsion zugleich mit der ersten Verhämmerung, und

3. wiederholte Verhämmerung des Schädels und wiederholte Injektion von Gehirnbrei.

Die Verhämmerung des Kopfes wurde durch leichtes Beklopfen des Schädels mit dem Stiele einer Aneurysmanadel durchgeführt (150 Schläge in 75 Sekunden). Zur intraperitonealen Injektion gelangte je 1 cm³ einer frisch bereiteten Emulsion von frischem Rattengehirn in 5 cm³ physiologischer Kochsalzlösung. Die Verhämmerung des Schädels erfolgte in Intervallen von einer Woche.

Die ersten Krankheitserscheinungen zeigten die Tiere aus der letzten Versuchsreihe, bei welcher also die experimentelle Gehirnerschütterung und die Injektion von Gehirnbrei jede Woche wiederholt wurden. Schon nach wenigen Verhämmerungen wurden die Ratten ruhiger, apathisch, mitunter auch reizbarer; unter allmählich zunehmender, allgemeiner Abmagerung stellten sich dann zum Teil tonische, zum Teil klonische Krampfzufälle vorübergehender Natur in einzelnen Muskeln und Muskelgruppen ein, die an Intensität und Extensität zunahmten, um schließlich in all-

Figure 5. Paper by Djordje Joannović about autoaggression in medicine from 1920 in Vienna in Journal Wiener klin. Wochenschrift.

decomposition products. These products, combined with other noxes, significantly increase and accelerate destruction processes of the altered tissue. If we translate the part of the sentence "combined with other noxes" into the language of modern immunology, then, in fact, we are talking about the creation of autoantibodies against the decay products of tissues ("scraps"), which act on both diseased and healthy tissue.

It is surprising that little is known about the papers of Đ. J. on autoaggression, both in native Serbia and abroad especially!?

THE TRAGIC END OF Đ. JOANNOVIĆ ON JANUARY 28, 1932

After the assassination of Croatian deputies in the Assembly, ethnic, religious and armed local riots in the country, King Aleksandar I Karadorđević, decided to take all power into his own hands. He established his monarchist dictatorship on January 6, 1929, in the Kingdom of Serbs, Croats and Slovenes. Slobodan Jovanović and others dissuaded him from that idea in vain. The king announced that "from now on, there is no mediator between me and

СРПСКИ АРХИВ

ЗА ЦЕЛОКУПНО ЛЕКАРСТВО

ОРГАН СРПСКОГ ЛЕКАРСКОГ ДРУШТВА

УРЕЂУЈУ:

Д-Р ЈОВАН ДАНИЋ и Д-Р ВОЈИСЛАВ МИХАИЛОВИЋ

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СВ. 11. и 12.

НОВИ ПОГЛЕДИ НА ПОСТАНАК И ЛЕЧЕЊЕ ИЗВЕСНИХ БОЛЕСТИ

Експерименталне студије од професора Д-р Ђорђа Јовановића.

Дозволите ми, да Вас упознам са радовима, којим сам се последњих година бавио. Чини ми се, да су питања, којима ћемо овом приликом имати посла, исто тако важна за теорију различних болести као и за практично лекарство.

Моја истраживања почела су, студијом неких повреда главе са нарочитим патолошким налазом. Ови случајеви тицали су се војника са повредама главе и мозга ватреним оружјем, који су се после стручне хируршке терапије вратили као излечени кући. После дужег бављења у домовини, после више недеља, месеци, па чак и после годину дана и више вратили су се понова у болницу, тужећи се на несносне болове у глави. Ови симптоми у кратко тако су се погоршали, да је нова операција постала неопходна. Извршена је поново трепанација али у мозгу није ни при самој операцији ни при аутопсији нађен никакав апсцес. При секцији мозга утврђена су мултипла огњишта размекшања мозга, како у близини, тако и у даљем одстојању од повреде мозга. Оваки особити патолошки налаз не може се за сад тачно објаснити. По мом мишљењу нарав ове лезије могла би се овако схватити.

Из резорпције повређеног мозганог ткања стварају се у организму супстанције, које као токсини или као ферменти на повређено ткање мозга дејствују, мозак даље мењају, рашчине. Лезије мозга без клиничких симптома од значаја су нам давно познате; њих има не само у близини повреда мозга, него и удаљено од њих. Оне су једнаке оним повредама, које припадају потресу мозга. На ове комозијом повређене делове централног живчаног система дејствују те супстанције, о којима је реч, тако да од безначајне повреде, произведене комозијом, постају већа или мања огњишта енцефаломалације.

30

Figure 6. The paper by Djordje Joannović on autoaggression in medicine from 1920 in the Journal Serbian Archives. The title of the paper is general and nonattractive and the surname Joannović was changed to Jovanović, so it was hard to detect.

my people". He had to find a firm personality to be the executor of his dictatorship, and he found it in general Petar Živković, whom he appointed the president of the Ministerial Council (Figure 7).

Živković was the captain, who in 1903 unlocked the door of the Court and let Apis and other conspirators in. They murdered Aleksandar Obrenović and Queen Draga and threw their corpses from the balcony into the courtyard. Borislav Mihajlović-Mihiz, a literary critic cynically said: "We had it, we threw it away". Živković supported the movement of Draža Mihailović.

During World War II in exile in London, Živković supported the movement of Draža Mihailović and the Yugoslav Army in homeland. Borislav Mihajlović Mihiz, a literary critic cynically said: "We had it, we threw it away". Nevertheless, he was a little jealous of Draža, believing that the refugee Government glorified him too much he immediately promoted him to the rank of general, proclaimed him the commander of the Yugoslav army in the Fatherland and the minister of the army and navy).

He never married and was accused of homosexuality, but this was rejected at the trial. He was guilty, among



Figure 7. General Petar Živković, President of the Council of Ministers, the executor of the dictatorship of the January 6, 1929 and King Alexander I Karadjordjević.

other things, for murdering 39 communists. The international public condemned it with an Appeal against “white terror” on December 1, 1929. Albert Einstein was also a signatory of the Appeal.

He died in Paris in 1947, still in exile. After World War II (1946), he was sentenced by the new authorities to death in absentia with the group of Draža Mihajlović.

In 1932, students of the Faculty of Medicine in Belgrade, leftists and rebels, organized the annual St.Sava student Ball.

They said that the patron of the Ball, King Aleksandar, was welcome, but not his radical right-wing president of the Council of Ministers general Petar Živković. He was furious and called Đ. Joannović to his cabinet. He allegedly told him: “You old fool, how can you not calm down your rebellious students?” and, even worse, he slapped him. All red with humiliation, Đ. Joannović ran out of the cabinet and went to his room at the Institute of Pathology where he lived. The lights in his room were on all night. The bed remained untouched, as he didn’t sleep that night. On the morning of January 28, 1932, he was found hanging from the window handle, the loop was a cord for pulling the curtain. He sat down in an armchair and pushed it away. It was found hanging against the wall on the floor. At that moment he was 61 years old and at the peak of his scientific creativity.

SUICIDE OR MAYBE EVEN MURDER?

Đ. Joannović’s death occurred in the night following the incident and humiliation experienced in Petar Živković’s cabinet. It was certainly a big emotional blow, a disappointment, and shock for Đ. J. Like old Serbs who used to die for their honor, he committed suicide.

Investigating the case, the author of this text heard from the late Prof. Marija Višnjić Frajnd, Đ. J.’s associate, that “a lot of ash was found in his fireplace in the morning”. This means that he burned some of his documentation (what? and why?) and it strongly suggests suicide (1-3).

However, Dr M. Kovačev, Đ. J.’s cousin (1-3), a gynecologist and obstetrician in Novi Sad, presents certain indications in his books, which, according to him, point to murder (10, 11, 23, 24):

- one evening before Đ. J.’s death, the suicide of a famous scientist Pirke and his wife in Vienna was discussed. Đ. Joannović said that he could not imagine a cultured and famous scientist could do such a thing; therefore, he expressed his negative attitude towards suicide;
- a few days before his death, his friends visited him, and he had a long pleasant conversation with them, which by no means predicted a tragedy;
- suicides usually leave a “farewell letter”, in which they explain why they decided to take the fateful step. No farewell letter was found in this case;
- Đ. J. told his brother Simeon: “No matter where and no matter how I die, you should know that I am here”, and pointing with his hand to the right pocket of his jacket, he also said: “I have put a letter here in which you will find everything of interest.” That letter was never found; this indicates that someone threatened him for something;
- his brother Simeon and the Council of the Faculty of Medicine demanded an autopsy, but it was not done;
- the police report on the investigation of the circumstances of the death has been lost;
- there is no evidence that the pollution test (ejection of suspended seeds) and the expertise of changes on the loop of the cord due to suspension were attempted;
- Đ. J. was not politically committed, but he loved all his students, both Ornas (nationalist students) and communists. He was on good terms with King Alexander. The injured General Petar Živković’s vanity who was probably satisfied by humiliating and slapping Đ. J., so it is hard to doubt that on the same night he faked his suicide and then covered everything up;
- at the time, Dr G. Stanulov worked at the Institute of Pathology and later became a professor of internal medicine at the Faculty of Medicine in Novi Sad. He said to the author of the text that the eventual murderer might be a “cadaver master” (a worker who arranges corpses after autopsy) who was primitive, rebellious and caused trouble, so that Đ. J. was inevitably often in conflict with him. However, that primitive man certainly did not know the technique of sophisticated suicide performed by Đ. J. It is known to forensic medicine, but laymen understand hanging as the situation in which a body should hang. On the other hand, Đ. J. was a tall, big and strong man and he would certainly have defended himself against an attempt of assassination;
- from Belgrade, two telegrams were sent by the Council of the Faculty of Medicine to his brother Simeon in Beodra about the tragic event, but he did not receive them; allegedly, the Post Office in Beodra was



Figure 8. Djordje Joannović on his deathbed in 1932 after suicide or murder. (Figure courtesy of Dr Nada Kovačev Šljapić, profesor of pathology at the Faculty of Medicine in Novi Sad, Đ. Joannović's cousin).

ordered not to send telegrams from Belgrade to the addressees;

- the housekeeper, who brought Đ. J. tea in the morning and who saw him hanged, alerted the rest of the staff of the Institute. The corpse was immediately transferred to another room, and in front of his room where the tragedy happened, a gendarme was constantly standing, not allowing anyone to enter the room;
- when accompanying the coffin from Belgrade to Beodra, the crown of the Court was not seen, but the representative of the Court was present;
- after Joannović's death, it was gossiped that his successor Ksenofon Šahović (K. Š.) had something to do with his death (but there is no evidence) and that he had "stolen" Đ. J.'s scientific papers (which is also not true because the author of this paper knows papers of both Đ. J. and K. Š. well, and they have absolutely no similarities).

FUNERAL FAREWELL OF Đ JOANNOVIĆ AT THE RAILWAY STATION IN BELGRADE ON THE WAY TO BEODRA (1932) COMMEMORATION, POSTHUMOUS ACKNOWLEDGMENTS AND HONOURS PATHOLOGISTS' ETERNAL MEMORY OF Đ. JOANNOVIĆ

Never before had Belgrade seen such a large and sad procession (**Figure 8**). The Serbian Patriarch Varnava approved a funeral service for Đ. Joannović, although the Serbian Orthodox Church opposed it due to suicide (out of reverence for the great scientist or he did not believe it was suicide). A procession of 2,000 students paraded past the bier, as they wished to show that they were not guilty of Đ. Joannović's death, as it was rumored. Mustafa Golubić and the communists organized protests against the Government because of this mysterious death (50, 54-65).

After his death, numerous commemorations and articles about Đ.J. followed, including obituaries and In memoriam 54-65.

In the dean's chain of the Faculty of Medicine in Belgrade there is also a medallion with the image of Đorđe Joannović.

Today, the Institute of Pathology of the Faculty of Medicine bears his name: "Prof. Đorđe Joannović", and there is a bust of him in the hall of the Institute.

As an illustration of pathologists' eternal memory of this man, we will quote nine lectures that were held at different time intervals.

NINE LECTURES ON Đ. JOANNOVIĆ, WHICH SHOW PATHOLOGISTS' ETERNAL MEMORY OF HIM

1. Levntal Z. Joannović Đorđe. *Forerunner of the idea of autoaggression in the pathogenesis of the diseases. Comunicazione presenta al XXI Congresso di Storia della Medicina, Siena, 22-28. Settembre 1968, Arti Graficke E. Cassidente, Roma, 1970.*
2. Kanjuh V. *60 years since the death of Serbian Royal Academy correspondent member Djordje Joannović. Today's view of his life and scientific work. XI meeting of the Department of Medical Sciences SASA. Belgrade, October 28, 1992.*
3. Kanjuh V. *60 years since the death of Djordje Joannović, founder of the Institute of Pathology at the Faculty of Medicine in Belgrade. Institute of Pathology. Belgrade, November 2, 1992.*
4. Kanjuh V. *Djordje Joannović as the founder of pathology in Serbia. Memorial lecture held at the 6th Congress of Pathologists of Yugoslavia. Zlatibor, June 17, 1994.*
5. Kanjuh V. *Djordje Joannović's contribution to medical science. Scientific gathering dedicated to the work and personality of Djordje Joannović (on the occasion of the 70th anniversary of his death). Organizer: Prof. Dr. Teodor Kovač (Novi Sad). Academy of Medical Sciences SMS. Belgrade, December 17, 2002.*
6. Kanjuh V. *70 years since the death of Djordje Joannović. I meeting of the Department of Medical Sciences of the SASA. Belgrade, January 29, 2003.*
7. Kanjuh V. *Djordje Joannović's contribution to medical science and book promotion: M. Kovačev "From a medical perspective. Life, work and fate of professor Djordje Joannović", vol. 4, 2nd ed. Editors: M. Kovačev and V. Kanjuh. Ed. Printing house "Futura" Petrovaradin. Novi Sad, 2004. Lecture at the SASA Branch in Novi Sad, March 19, 2004.*
8. Kanjuh V, Radojević Škodrić S. *Dr Djordje Joannović - founder of the Institute of Pathology. Lecture at the 46th symposium "Aspirations and innovations in medicine" Med.fak. Univ. in Bgd. Dec. 13 2017 as part of the Mini Symposium "Celebration of 95 years of the Institute of Pathology Dr. Đorđe Joannović".*
9. Kanjuh V. *Corresponding member of the Serbian Royal Academy Djordje Joannović, one of the pioneers of study-*

ing autoaggression in medicine. X meeting of Dept. Med. Science of SASA Dec. 27, 2017.

V.Kanjuh, as the president of the Yugoslav (Serbian) Society of Pathologists, introduced a permanent Memorial Lecture dedicated to Đ.J.

The General Hospital in Zrenjanin bears his name and has a bust of him in its park.

The primary school in Novo Miloševo also bears his name. The house where his brother Simeon lived, as well as the grave of Đ. J. are in relatively good condition.

The Cancer Society of Serbia issued a postage stamp with his image (6,14).

At the Celebration of 80 years of the fight against cancer in Yugoslavia and Serbia, Đ. J. was the first to receive the Gold Plaque of the Yugoslav Society for the Study and Treatment of Cancer and the Serbian Society for the Fight against Cancer on December 10, 2007 "For a great contribution to the work of the Society and the development of oncology in Serbia". The President of the Society Prof. Slobodan Čikarić presented the Plaque to V. Konjuh for safekeeping.

There are encyclopedic references about Đ. J. written in Zagreb's Yugoslav Medical Encyclopedia (28) as well as in Stanojević's National Encyclopedia in Serbia (58). In the upcoming seventh book of the Serbian Encyclopedia (letter J), V. Konjuh prepared a text on Đ. J.

Đ.Joannović is the holder of 14 domestic and foreign awards.

CONCLUSION ABOUT THE LIFE, WORK AND SIGNIFICANCE OF DJ. JOANNOVIĆ

Đ. Joannović was a full-time professor of pathology at the Faculty of Medicine of the University of Vienna - a city that at the time was one of the world's medical capitals. He was, therefore, at the time a Serb with the highest university medical title of all the Serbs in the world. Out of noble patriotism, ignoring that he could run an institute of pathology in Europe or in the USA, he came to Belgrade to help Serbia and the Serbian people in 1920.

He participated in the triumvirate for the establishment of the Faculty of Medicine in 1920 and in 1926 he opened the newly built Institute of Pathology, which was significant on a world scale. He was the dean four times and a vice-dean three times. He is the author of numerous papers in the field of experimental oncology and pathological morphology and one of the pioneers of the world's study of autoaggression in medicine.

With his tragic death (suicide or murder) Serbia lost the best and most deserving Serbian medical teacher and scientist in the first third of the 20th century, who was 61 years old and in full scientific creativity when he died. Đ.J. Joannović. is the most tragic figure in the 100-year-long tradition of the Faculty of Medicine in Belgrade.

“We lost the wing that lifted us up”, M. Ivković (53) wrote in the text “Instead of a Preface” for the Đ. Joannović’s Memorial book.

We, Serbs, are proud of our scientific greats: Nikola Tesla, Ruđer Bošković, Milutin Milanković, Mihajlo Pupin... We can safely and with a clear conscience, add one more Banatian to the list - Djordje Joannović.

He came to help us - and what did we do to him!

At the celebration of the 95th anniversary of the Institute of Pathology “Prof. Đorđe Joannović”, academician V. Kanjuh and prof. S. Radojević Škodrić held a lecture – to the memory of Đ. J. The dean at the time, academician N. M. Lalić (24), a pioneer of cardio-diabetology in Serbia and Republic of Srpska, said of Đ. Joannović: “We hope

that such a cruel conflict between the Executive Political Authority and the Autonomy of the University will never happen again.” The current dean prof. L. Davidović, a world-recognized vascular surgeon, a foreign member of the Russian Academy of Sciences, gave a significant place to Đ. Joannović when organizing the celebration of the 100th anniversary of the Faculty of Medicine.

We, his successors in pathology of the third and fourth (current) generation, V. Kanjuh and S. Radojević Škodrić, and his successors as deans, N. M. Lalić and L. Davidović, owe him respect and eternal memory.

DIXIMUS ET SERVAVIMUS ANIMAS NOSTRAS WE SAID AND SAVED OUR SOULS

References

- Kovačev M. Život, rad i sudbina profesora Đorđa Joannovića (The life, work and fate of Professor Đorđe Joannović). Iz lekarske perspektive, knjiga 3. Izd. Društvo lekara Vojvodine, Ginekološko-akušerska sekcija, Naučno društvo za istoriju zdravstvene kulture Vojvodine (ured. M. Kovačev). Novi Sad, 1999., str. 1 - 22.
- Kovačev M., urednici M. Kovačev i V. Kanjuh. Život, rad i sudbina profesora Đorđa Joannovića, osnivača Medicinskog fakulteta 1920. god. u Beogradu, člana Srpske akademije nauka (The life, work and fate of Professor Đorđe Joannović, the founder of the Faculty of Medicine in 1920. in Belgrade, a member of the Serbian Academy of Sciences). Iz lekarske perspektive knj. 4. Seni profesora Joannovića. Izd. Štamparija “Futura” Petrovaradin. Str.1- 92. Novi Sad 2004.
- Kovačev M. Život, rad i sudbina profesora Đorđa Joannovića (The life, work and fate of Professor Đorđe Joannović) str. 1- 49. U knj. M. Kovačev. Urednici M. Kovačev i V. Kanjuh. Iz lekarske perspektive knj. 4. Seni profesora Joannovića. Život, rad i sudbina profesora Đorđa Joannovića, osnivača Medicinskog fakulteta 1920. god. u Beogradu, člana Srpske akademije nauka. Izd. Štamparija “Futura” Petrovaradin. Novi Sad 2004.
- Kanjuh V. Doprinos Đorđa Joannovića Medicinskoj nauci (Uključujući i originalne koncepcije o autoagresiji i alergičnom encefalitisu u medicini). (Rezime na engleskom jeziku str.63 – 5)[George Joannović’s contribution to Medical Science (Including original conceptions of autoaggression and allergic encephalitis in medicine). (Summary in English pp 63 – 5)]. U knj. M.Kovačeva, urednici i glavni autori: M.Kovačev, V.Kanjuh. Izd. Štamparija “Futura” Petrovaradin. Novi Sad 2004., str. 50 – 65.
- Preštampano: u Halo Beograd 94 (Naučni časopis urgentne medicine) 2003; V (24-25): 69 – 73 (dvo broj je izašao 2004.).
- Mutibarić A. Beogradski period života i rada profesora i akademika dr Đorđa Joannovića (1920 – 1932) (The Belgrade period of life and work of professor and academician Dr. Đorđe Joannović (1920 – 1932). U knj. M.Kovačeva, urednici M. Kovčev i V. Kanjuh. Iz lekarske perspektive knj. 4. Seni profesora Joannovića. Život, rad i sudbina profesora Đorđa Joannovića, osnivača Medicinskog fakulteta 1920. godine u Beogradu, člana Srpske akademije nauka. Izd. Štamparija “Futura” Petrovaradin. Str. 74 - 82. Novi Sad 2004.
- Mutibarić A. Profesor Joannović u filateliji (Professor Joannović in philately). U knj. M.Kovačeva, urednici M. Kovačev i V. Kanjuh. Iz lekarske perspektive knj. 4. Seni profesora Joannovića. Život, rad i sudbina profesora Đorđa Joannovića, osnivača Medicinskog fakulteta 1920. godine u Beogradu, člana Srpske akademije nauka. Izd. Štamparija “Futura” Petrovaradin. Str.83 - 88, Novi Sad, 2004.
- Mutibarić A. Rodonačelnik jugoslovenske onkologije patolog prof. dr Đorđe Joannović (The progenitor of Yugoslav oncology, pathologist Prof. Dr. Đorđe Joannović. U knj. M.Kovačeva, urednici M. Kovačev i V. Kanjuh. Iz lekarske perspektive knj. 4. Seni profesora Joannovića. Život, rad i sudbina profesora Đorđa Joannovića, osnivača Medicinskog fakulteta 1920. godine u Beogradu, člana Srpske akademije nauka. Izd. Štamparija “Futura” Petrovaradin. Str.66 - 73, Novi Sad, 2004.
- Paunović D-D. Dr Đorđe H. Joannović 1871 – 1932. Život i delo (Dr. Đorđe H. Joannović 1871 – 1932. Life and work). Atelje FORSA, GNB “Zarko Zrenjanin”, str. 1 – 400. Zrenjanin, Maja 2006.
- Чикарић С. Радиотерапија. Илустрована историја (Radiotherapy. Illustrated history). Ecolibri – Београд 2006, стр.1- 372. (стр. 71 – 3: Медицински факултет Универзитета у Београду).
- Чикарић С. 80 година борбе против рака у Србији. Југословенско друштво за изучавање и сузбијање рака. Друштво Србије за борбу против рака (80 years of fighting cancer in Serbia. Yugoslav Society for the Study and Suppression of Cancer. Society of Serbia for the fight against cancer). Штампa АМД СИСТЕМ, Земун. Стр. 1 – 599. Београд, 2007.
- Текстови о Ђ.Јоанновићу: Предговор, Говор Р.Буријана на сахрани Ђ. Ј. 1932. стр.1 - 2; Долазак Ђ.Ј. у Београд и функције, стр.18-19; Југословенско друштво за изучавање и сузбијање рака, стр. 19 – 21; Институт за патологију и његова Катедра, стр.21 – 7; Рад В.Кањуха: Проф.др Ђорђе Јоанновић (16. јун 1871. Беч – 28. јануар 1932. Београд), стр.27 – 31.
- Кањух В. Академик. Проф.др Ђорђе Јоанновић (16. јун 1871. Беч – 28. јануар 1932. Београд) (Prof. Dr. Đorđe Joannović (June 16, 1871, Vienna – January 28, 1932, Belgrade), стр. 27-31, са фотографијом и потписом В.К. У књ. С.Чикарића 80 година борбе против рака у Србији. Југословенско друштво за изучавање и сузбијање рака. Друштво Србије за борбу против рака. Штампa АМД СИСТЕМ, Земун. Београд, 2007.
- Чикарић С. Преко трња до звезда (Over the thorns to the stars). Изд. Друштво Србије за борбу против рака и Друштво историчара Србије “Стојан Новаковић”, стр. 1 – 540. Београд, 2013. (стр. 173 – 5: Медицински факултет Универзитета у Београду; стр. 480 – 3, рад В.Кањуха реф.13; стр. 406 – 8, рад П. Брзаковића реф. 14).
- Кањух В, академик САНУ. О проф.др Ђорђе Јоанновићу, доп. чл. СКА, првом српском онкологу – научнику и зачетнику патолошке анатомије, једном од светских пионира открића аутоагесије у медицини и његовом трагичном крају (About Prof. Dr. Đorđe Joannović, a corresponding member of Serbian Royal Academy, the first Serbian oncologist - scientist and originator of pathological anatomy, one of the world pioneers in the discovery of autoaggression in medicine and its tragic end). (Говор на Свечаној академији поводом 80 година борбе против рака у Србији, Београд, 10. 12. 2007.). У књ. С. Чикарића Преко трња до звезда. Изд. Друштво Србије за борбу против рака и Друштво историчара Србије “Стојан Новаковић”, Београд, 2013., стр. 480 – 3. (Билингвални рад српско-енглески).

16. Брзаковић П. Академик Ђорђе Јоанновић (1871–1932) (Academician Đorđe Joannović (1871 – 1932)) (у поглављу о поштанским маркама истакнутих онколога), стр. 406 – 8. У књ. Чикарић С. Преко трња до звезда. Изд. Друштво Србије за борбу против рака и Друштво историчара Србије “Стојан Новаковић”, Београд, 2013.
17. Ковач Т. Зборник саопштења Научног скупа посвећеног делу и личности Ђорђа Јоанновића одржаног у Београду 17.децембра 2002.године ((Proceedings of the Scientific Meeting dedicated to the work and personality of Đorđe Joannović held in Belgrade on December 17, 2002). Изд. Друштво лекара Војводине СЛД (гл. и одг. уред. Н. Рончевић), Нови Сад, 2004.
18. Ковач Т. Предговор (стр.7) и рад: Живот и рад Ђорђа Јоанновића у Бечу. Прилог грађи за биографију (Foreword (p. 7) and paper: Life and work of Đorđe Joannović in Vienna. Attachment to curriculum vitae), (чланак, у измењеном облику, објављен у Енциклопедији “Свеске Матице српске”. Грађа и прилози за културну и друштвену историју. Серија природних наука, св.6, Нови Сад 1995., стр. 62 – 72). У Зборнику саопштења Научног скупа посвећеног делу и личности Ђорђа Јоанновића одржаног у Београду 17. децембра 2002.године. Изд. Друштво лекара Војводине СЛД (гл. и одг. уред. Н. Рончевић) Нови Сад 2004., стр. 9 – 21.
19. Kanjuh V, Lončar Z. Pleoaje za revitalizaciju kliničkih obdukcija. Prvi deo: Opšti pregled. (Rezime na engleskom). [Pleas for the revitalization of clinical autopsies. Part One: Overview] .(Summary in English). Medici.com (Banja Luka, RS) 2019; XVI (96): 78-83.
20. Павловић Б. Место Ђорђа Јоанновића у развоју београдског Медицинског факултета (Đorđe Joannović's place in the development of the Belgrade Faculty of Medicine. У Зборнику саопштења Научног скупа посвећеног делу и личности Ђорђа Јоанновића одржаног у Београду 17. децембра 2002.године. Изд. Друштво лекара Војводине СЛД (гл. и одг. уред. Н. Рончевић), Нови Сад, 2004., стр. 23 – 6.
21. Вуковић Ж. Ђорђе Јоанновић (Đjordje Joannović). У Зборнику саопштења Научног скупа посвећеног делу и личности Ђорђа Јоанновића одржаног у Београду 17. децембра 2002.године. Изд. Друштво лекара Војводине СЛД (гл. и одг. уред. Н. Рончевић), Нови Сад, 2004., стр. 27 – 36.
22. Раушки Д. Занимљивости везане за породицу Јоанновић (Interesting facts about the Joannović family).У Зборнику саопштења Научног скупа посвећеног делу и личности Ђорђа Јоанновића одржаног у Београду 17.децембра 2002.године. Изд. Друштво лекара Војводине СЛД (гл. и одг. уред. Н. Рончевић) Нови Сад 2004., стр. 43 – 47.
23. Kanjuh V. Uloga medija u popularisanju medicine i otkrića srpskih istaknutih lekara-naučnika. Na primerima Laze K. Lazarevića i Đorđa Joannovića (The role of media in popularisation of medicine and discoveries of prominent Serbian physicians and scientists - Laza K. Lazarević and Đorđe Joannović). Zbornik radova sa Naučnog simp “Medicinska nauka, etika i masmediji”. Gl. Ured. VT Jokanović. Izd. Akad. Med. nauka SLĐ, Ogranak za Vojvodinu, Med. fak. Novi Sad, MMVIII, str. 105 – 17.
24. Марковић Д. (новинарка). Разговор с Владимиром Кањухом, академиком. Добитником Награде “Браћа Карић за научни и истраживачки рад у 2003.години” (Conversation with Vladimir Kanjuh, academician - the winner of the Karić Brothers Award in 2003 in the field of science and research work). Стр. // pp 98 – 109. У књ. Награда Браћа Карић 2003. Изд. Карић фондација, уред. И. Јустинијановић. Публикум. Београд, 2004., стр. 1 – 163. (О Ђ. Јоанновићу стр. 106 – 7). (About Đ. Joannović pp 106 – 7). (Билингвални чланак).
25. Kanjuh V. Đorđe Joannović – First Serbian oncologist-scientist (On the occasion of the 75 anniversary of his tragic death). Arch Oncol (Sremska Kamenica) 2008;16 (1-2):18-21. Прештампано и са енглеског преведено на српски (В. и С.Кањух): Ђорђе Јоанновић – Први српски онколог-научник (Поводом 75. годишњице од његове трагичне смрти). Оба текста су штампана у: Final Programme pp 18 – 21 and 12 – 14 of the Serbian Assoc for Pathologists and Cytologists and Europ Soc Pathol: 1st Internat Congr 21 – 23 april 2016. Zlatibor, Serbia (Билингвални рад српско-енглески).
26. Kanjuh V, Radojević Škodrić S. Prof.dr Đorđe Joannović, dopisnik član SKA, osnivač i prvi upravnik Instituta za patologiju Medicinskog fakulteta u Beogradu, prvi srpski onkolog – naučnik i jedan od svetskih pionira učenja o autoagresiji u medicini. (Prof. Dr. Djordje Joannovic, corresponding member of Serbian Royal Academy, founder and first director of the Institute of Pathology of the Medical Faculty in Belgrade, the first Serbian oncologist - scientist and one of the world's pioneers in learning about autoaggression in medicine). Medici.com (Banja Luka, RS) 2018; XV (85): 80 – 4.
27. Kanjuh V. О Ђорђу Јоанновићу поводом 95 – годишњице Института за патологију “Prof.dr Đorđe Joannović” Medicinskog fakulteta Univerziteta u Beogradu (About Đorđe Joannović on the occasion of the 95th anniversary of the Institute of Pathology “Prof. Dr. Đorđe Joannović” of the Medical Faculty University of Belgrade). Medici.com (Banja Luka, RS) 2018; XV (85): 51.
28. Кањух В. О доктору Ђорђу Јоанновићу оснивачу Института за патологију Медицинског факултета у Београду – поводом 60.годишњице постојања (About Dr. Đorđe Joannović, founder of the Institute of Pathology of the Faculty of Medicine in Belgrade - on the occasion of the 60th anniversary of its existence. Интервју новинарке С.Чупић за Радио Београд априла 1987.
29. Jevtić M. Široka staza Marije Jančić (The wide path of Marija Jančić). Kolekcija odgovori. Izd. Beogradska knjiga. Kej. Valjevo. Beograd, 2002. (o Đorđu Joannoviću str. 89-90).
30. Levntal Z. Joannović Đorđe. Odrednica (bio-bibliografija) za Medicinsku enciklopediju Jugoslovenskog leksikografskog zavoda u Zagrebu 1968; 3: 585 – 6.
31. Levntal Z. Onkološki opus Đorđa Joannović (The oncological opus of Djordje Joannović). Medicinski pregled (Novi Sad) 1966; XIX (1):49-53.
32. Kanjuh V, Ostojić M, Bojić M, Beleslin B. Conceptions about etio-pathogenesis of cancer and immortality of cancer cell at the transition to the next millennium. У последипл. уџб. и Научној монографији Недељковић СИ, Кањух ВИ, Вукотић МР. Мед. фак. и Катедре кардиологије у Бгд.: Кардиологија, треће изд. I и II том. Изд. “Београд”. Београд, 2000; 2(18.30):2336 – 41.
33. Прештампано у књ. Кањух ВИ и сар. Морфолошко-клиничке корелације у кардиоваскуларним болестима. САНУ и Одбор за кардиоваскуларну патологију. Изд. “Београд”. Београд, 2001., стр.6 + 2129 – 2423.
34. Kanjuh V, Knežević M, Eri Ž, Ostojić M, Beleslin B. Conceptions about cancer genetics and immortality of cancer cells in 2000 (Introductory lecture). 9th Yugoslav Congr Pathol with Internat Particip. Vrnjačka Banja, Yu, June 14 – 17, 2000. Arch Oncol (Sremska Kamenica, Yu) 2001; 9 (Suppl 1): 3 – 4.
35. Kanjuh V. Profesors of the School of Medicine, University of Belgrade – Members of the Serbian Academy of Sciences and Arts 1920 – 1990. In book: School of Medicine University of Belgrade 1991., Publ. School of Medicine University of Belgrade, pp 91 – 99.
36. Kanjuh V. Saradnja Medicinskog fakulteta Univerziteta u Beogradu i Srpske akademije nauka i umetnosti. Nastavnici Medicinskog fakulteta – članovi Srpske akademije nauka i umetnosti 1920-1992 (Collaboration of Belgrade School of Medicine and Serbian Academy of Sciences and Arts. Professors of Medical School – members of SASA 1920-1992). U knj. Simeunović S.D, Kanjuh V, Pantelić D (čl. Uređ. Odbora). Medicinski fakultet Univerziteta u Beogradu. Godišnji pregled 1992 – 93. Izd. CIBIF. Beograd 1992., str. 58-64. (O Đorđu Joannoviću str. 64) (About Djordje Joannović on p 64).
37. Kanjuh V. Beograd University School of Medicine and Serbian Academy of Sciences and Arts. Seventy three years of cooperation (1920-1993). Fourty professors of the School of Medicine – members of the Academy. In book: School of Medicine, University of Belgrade 1993-94. Edit.: CIBIF, Belgrade, 1993., pp. 45-56.
38. Јовановић Симић Ј. Аутор Изложбе: Великани српске медицине поводом 175 година САНУ и 145 година СЛД (Giants of Serbian medicine on the occasion of 175 years of SANU and 145 years of SLD). Изд. САНУ (Музеј науке и технике) и СЛД. Стр. 1 – 118. Стр. 73 – 74. Ђорђе Јоанновић (Беч, 1871 – Београд, 1932). САСА: дописник Академије природних наука (1926). СЛД: редовни

- члан (1920); председник (1924 – 1925) (Đorđe Joannović (Vienna, 1871 – Belgrade, 1932). Serbian Royal Academy: Correspondent of the Academy of Natural Sciences (1926). SMS: regular member (1920); President (1924 - 1925).
39. Чоловић Р. (Уред. и главни аутор). Монографија: 150 година Српског лекарског друштва. (Monograph: 150 years of the Serbian Medical Society) Изд. СЛД. Стр.1-559. Београд, 2021. (О Ђорђу Јоанновићу председнику СЛД од 19. 10. 1924 до 4. 09. 1925.) (About Đorđe Joannović, president of the SMS from 19 October 1924 to 4 September 1925), стр. 524 – 5.
 40. Кањух В, Радојевић Шкодрић С. Промоција Монографије 150 година Српског лекарског друштва (Promotion of the Monograph 150 years of the Serbian Medical Society). Medici.com (Banja luka, RS) 2022; XIX (111): 60 - 4.
 41. Спужић В. О терапијском дејству Јоаннина (On the therapeutic effect of Joannin). Српски архив 1925; 8: 403-16.
 42. Милосављевић Т. Ђорђе Јоанновић – патолог (Đorđe Joannović – pathologist). Књижевна реч 1983; 208: 12.
 43. Ehrlich P, the Nobel Prize in Physiology or Medicine 1908. Biography. Nobel Lectures, Physiology or Medicine 1901 – 1921. Elsevier Publ. Comp. Amsterdam, 1967.
 44. Masugi M. Über das Wesen der spezifischen Veränderungen der Niere und der Leber durch das Nephrotoxin bzw. Hepatotoxin. Zugleich ein Beitrag zur Pathogenese der Glomerulonephritis und Lebererkrankung. Beitr.Path. Anat, 1933; 91:81 – 112.
 45. Pfeiffer E F, Merrill JP. The role of auto-antibodies in the pathogenesis of diffuse glomerulonephritis. Dtsch Med Wochenschrift 1962; 87(18): 934-944.
 46. Witebsky E. Chronic thyroiditis and autoimmunization. Am J Med Assoc. 1957;164 (13):1439 - 47.
 47. Silverstein AM. Autoimmunity versus horror autotoxicus. The struggle for recognition. Nature Immunology.2001; 2 (4): 279 - 281.
 48. Milenković Đ. Sedamdeset godina patologije i sudske medicine i stottrideset godina rada prosektora u vojnom sanitetu (Seventy years of pathology and forensic medicine and one hundred and thirty years of work a forensic medical examiner in military sanitation). Vojnosanit Pregl 1992; 49 (5): 413-8.
 49. Dimitrijević J, Stanković Z, Brankovan K, Tatić V. 80 godina patologije i sudske medicine u Vojnomedicinskoj akademiji (80 years of pathology and forensic medicine at the Military Medical Academy).. Vojnosanit Pregl 2002; 59 (6 Suppl): 3-9.
 50. Kanjuh V. Patološka anatomija u Srbiji i Crnoj Gori. Istorijat (od početaka u drugoj polovini XIX veka do 1992.godine), razvoj i današnje stanje (o Joannoviću str. V-VIII) (Pathological anatomy in Serbia and Montenegro. History (from the beginnings in the second half of the 19th century until 1992), development and current situation (about Joannović p. V-VIII). Simpozijum » Dostignuća i stremljenja u patologiji » povodom 30 godina Klinike za patologiju i 33 godine Medicinskog fakulteta u Nišu. Niš, 23. – 24. oktobar 1992. Acta Facultatis Medicae Naissensis 1992;12 (1): str. I-XXXIII.
 51. Kanjuh V, Stevanović G, Ostojić M, Macura N, Kanjuh S. Rudolf Virchow (1821- 1902). Povodom stogodišnjice smrti (Rudolf Virchow (1821- 1902). On the occasion of the centenary of his death.. Halo 94. 2002; V(22):61-5.
 52. Kanjuh V, Stevanović G, Ostojić M, Stanković Z, Dimitrijević J, Kanjuh S. Rudolf Virchow (1821-1902) i njegov uticaj na razvoj patološke anatomije u Srbiji (Rudolf Virchow (1821-1902) and his influence on the development of pathological anatomy in Serbia).Vojnosanit Pregl. 2002;59(6 Suppl):11-9.
 53. Споменница СЛД 1872 – 1972. (Memorial book of SMS 1872 – 1972). Београд: Српско лекарско друштво, 1972; 197.
 54. Завод за општу патологију и патолошку анатомију (The Institute of General Pathology and Pathological Anatomy). Споменница Медицинског факултета у Београду. Медицински факултет, 1920 – 1935; 43-5.
 55. Станојевић В. Јоанновић Ђорђе (Joannović Djordje). Народна енциклопедија. 1926; књига II: 163-4.
 56. Ивковић КМ. Уместо предговора (Instead of a preface). Споменница проф.др Ђ.Јоанновићу. Српски архив 1932; 34: 59 - 60.
 57. Буријан Р, Стефановић С, Симић Т, Рувидић Ж.М, Ђуричић И, Јовановић Љ. Говори на комеморацији пок. Проф.Ђорђу Јоанновићу (The spokes at the commemoration of the deceased. Prof. Đorđe Joannović).Српски архив 1932; 34 (4): 289 – 307.
 58. Буријан Р.Ђорђе Јоанновић (Djordje Joannović). Медицински преглед (Београд) 1932; 2: 21-4.
 59. Комеморација и откривање спомен-плоче и споменика професору др Ђорђу Јоанновићу у Банатском Милошеву – Беодри (Commemoration and unveiling of the memorial plaque and monument to Professor Đorđe Joannović in Banatian Miloševo – Beodra). Медицински преглед (Нови Сад) 1957; 3: 180 – 4.
 60. Тихомиров Д. Проф.др Ђорђе Јоанновић (in memoriam) (Prof. dr Đorđe Joannović In Memoriam). Гласник за сталешка и здравствена питања, прилог "Лијечничког вјесника", 1932; 3: 63 - 7.
 61. Maresch R. Georg Joannović. Wiener klin. Wochenschrift 1932; 7:220.
 62. Gruber GB. Georg Joannović. Münch. Med Wochenschrift 4.03. 1932. s395.
 63. Павловић Б. Академик проф.др Ђорђе Јоанновић, један од првих српских научника светског гласа (Academician Prof. Dr. Đorđe Joannović, one of the first Serbian scientists -world recognized).Прилог за "Монографију Ново Милошево", Ново Милошево, 1995;51-4.
 64. Лековић А. Научни проналасци покојног др Ђорђа Јоанновића изнети су пред велики лекарски форум (The scientific inventions of the late Dr. Đorđe Joannović were presented before a large medical forum).Београд, "Правда", 19. 07. 1933.
 65. Борић Д. У спомен пок. Професора д-ра Ђорђа Јоанновића дописног члана Српске академије наука (In memory of the deceased. Professor dr Đorđe Joannović, corresponding member of the Serbian Academy of Sciences). Гласник САН 1957; књ. VIII, св.2, стр. 263 – 5.
 66. М.П. Др Ђорђе Јоанновић, редовни професор патологије Медицинског факултета у Београду. Рођен 16. VI 1871 – умро 28. I 1932. (читуља) (Dr. Đorđe Joannović, full professor of pathology at the Faculty of Medicine in Belgrade. Born June 16, 1871 – died January 28, 1932 (obituary)). Српски архив 1932; 34 (1): 59 – 60.
 67. Гавриловић Б. (председник Српске краљевске академије). Ђорђе Јоанновић, патолог (Đorđe Joannović – pathologist). (Говор на свечаној Скупштини Академије 6. марта 1932.год.). Годишњак Српске краљевске академије 1933; XL: 117 - 9.
 68. Maksimović J. Doprinos lekara iz Vojvodine u uspostavljanju zdravstvene službe u Srbiji i osnivanju i radu Srpskog lekarskog društva (The contribution of doctors from Vojvodina in the establishment of health services in Serbia and the establishment and work of the Serbian Medical Society). Med Pregl 2008; LXI (3-4): 191 – 203.Novi Sad. (О Ђ.Ј. на стр.198).

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PROF. DR ĐORĐE JOANNOVIĆ, DOPISNI ČLAN SRPSKE KRALJEVSKE AKADEMIJE, DEKAN, PATOLOG I PRVI SRPSKI ONKOLOG, JEDAN OD SVETSKIH PIONIRA UČENJA O AUTOAGRESIJI, NAJTRAGIČNIJA LIČNOST U JEDNOVEKOVNOJ ISTORIJI MEDICINSKOG FAKULTETA (151 GODINA OD ROĐENJA I 90 GODINA OD SMRTI)

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Sažetak

Najveća naučna dostignuća Đ. Joannovića, pored učešća u otkrivanju autoagresije u medicini, bila su u oblasti eksperimentalne onkologije i patološke morfologije tumora. Bio je prvi onkolog-naučnik u Srbiji.

Đ. Joanovićevo smrt dogodila se u noći nakon incidenta i poniženja doživljenog u kabinetu Petra Živkovića. Bio je to svakako veliki emotivni udarac, razočarenje, šok za Đj. Joanovića. Kao i stari Srbi koji su ginuli za svoju čast, izvršio je samoubistvo.

Ključne reči: Medicinski fakultet, Institut za patologiju, Đorđe Joannović, Univerzitet u Beogradu

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