

Brief historical note on Juha Hernesniemi

Breve nota histórica sobre Juha Hernesniemi

Karoline Schereck Kreitmeyer¹ 

Rafael dos Santos Borges²

Ana Carolina Oliveira Santos Gonçalves³

Sarah Raquel Martins Rodrigues⁴

Thamara de Almeida Silva Teodoro⁵

Taciana Maria Rolim Sampaio Oliveira⁶

Gabriel Medeiros Rocha⁷

Rosy Anne da Rocha Lima⁸

Paulo Roland Kaleff⁹

ABSTRACT

Juha Hernesniemi (1947-) is a world-famous Finnish neurosurgeon for countless achievements and innovations in medical science and education. This paper describes a brief historical note and its contributions to global neurosurgery development. Juha Hernesniemi is one of the 56 most important neurosurgeons in the world. He has a big influence in brain tumor surgery, skull base surgery, and, specially, in vascular neurosurgery. Moreover, Hernesniemi is an important name regarding active treatment instead of a conservative approach for high-risk patients.

Keywords: *Hernesniemi; Juha Hernesniemi; Historical note; Bibliography*

RESUMO

Juha Hernesniemi (1947-) é um neurocirurgião finlandês mundialmente conhecido por diversas conquistas e inovações na prática clínica e educacional na Medicina. Esse artigo discorre sobre sua biografia e suas contribuições para o desenvolvimento global da neurocirurgia. Juha Hernesniemi é um dos 56 neurocirurgiões mais importantes do mundo na atualidade. Possui grande influência nas cirurgias de tumor, base de crânio e especialmente na cirurgia vascular. Além disso, Hernesniemi é um importante nome para o tratamento mais ativo, em vez de conservador, para pacientes de alto risco.

Palavras-Chave: *Hernesniemi; Juha Hernesniemi; Nota histórica; Bibliografia*

¹MD, MR. Medical Residency in Neurosurgery, Neurosurgery Department, Irmandade Santa Casa de Limeira, Limeira, SP, Brazil.

²Medical student, Federal University of Minas Gerais, Belo Horizonte, MG, Brazil.

³Medical student, Tiradentes University, Aracaju, SE, Brazil.

⁴Medical student, Federal University of Pernambuco, Caruaru, PE, Brazil.

⁵Medical student, Federal University of Alagoas, Maceió, AL, Brazil.

⁶Medical student, Federal University of Paraná, Curitiba, PR, Brazil.

⁷Medical student, Catholic University of Pernambuco, Recife, PE, Brazil.

⁸Medical student, Universidad Sudamericana, Salto Del Guairá, Paraguai

⁹MD, PhD. Neurosurgeon, Irmandade Santa Casa de Limeira, Limeira, SP, Brazil.

Received Jan 4, 2022

Corrected Jan 19, 2022

Accepted Jan 20, 2022

BRIEF HISTORY

Juha Hernesniemi (Figure 1)¹ was born on October 18, 1947, in Kannus, a village in Nieminen, Finland. He is married and has three children and three grandchildren².



Figure 1. Prof Juha Hernesniemi. Credit: Alchetron, 2022¹

In 1973, he was graduated in Medicine from the University of Zurich, Switzerland. From 1973 to 1979 he was a resident of psychiatry, internal medicine, surgery, and neurosurgery in Finland³. In 1976, he operated his first aneurysm⁴. From 1980 to 1997 he worked at Kuopio University as a senior doctor⁵. In 1982 he went to Yaşargil's place in Zurich and, after that visit, he became the first in Finland to use a counterbalanced microscope with a mouth switch in 1983⁴. In 1991, endovascular treatment of intracranial aneurysms began in Finland⁴. In 1997 he took over the position of professor and director of the Neurosurgery Department at the Central Hospital of Helsinki University in Finland³, where he stayed until 2015⁵.

His main interests are vascular neurosurgery, skull base surgery, and brain tumors⁶. More than 16,000 surgeries was performed in his career, about a quarter of which are brain tumors. One of its hallmarks is surgery in constant motion, in which the neurosurgeon and the operating microscope move throughout the operation, reducing it to a quarter of the normal time⁷. There are more than 6,000 brain aneurysm operations, almost all operated under a microscope⁴ and more than 3,000 brain tumor operations⁵ in his curriculum.

Juha Hernesniemi is one of those rare individuals capable of achieving world-class excellence and achievements in all three pillars of Medical Sciences: Clinical Practice, Research, and Teaching⁸.

Hernesniemi gained fame at the Kuopio Neurosurgery between 1980 and 1997 for his exceptional work in the field of microsurgery, always analyzing, modifying, standardizing, and repeating its procedures. This way, he had completed highly complex surgeries relatively quickly. However, this was not achieved with simplified methods, but with constant training. His first feat of genius was, therefore, to minimize micro-neurosurgery with the aid of a Contraves Zeiss microscope⁸, laying the foundations for what in the future would become world-widely known as Helsinki neurosurgery. He has always defended the philosophy of a simple, clean, and fast neurosurgery, which is so present in his words for everyone to be inspired: "Simple and clean while preserving normal anatomy. To be clean is to be quick and effective. Surgery is art – you should be one of those artists"⁴.

His second great genius feature was to realize that live presence and open-access video are far superior ways to display his minimalist art⁸. Helsinki's neurosurgery, then, is planned and prepared to the smallest detail, including the organization of the operating room: during Hernesniemi's art, everything is done to ensure that his co-workers understand the next steps of the operation⁴.

Moreover, he was responsible for establishing an aneurysm database in eastern Finland⁶. In 1999, he joined the advisory boards of the Neurosurgery and Surgical Neurology magazines, having been an associate editor of Surgical Neurology since 2008⁶. He is a founding member of the World Academy of Neurological Surgeons and a member of the Finnish Neurological Society⁶. He has been invited by international stars to be part of doctoral dissertation boards for neurosurgery in Helsinki⁸.

Also, he sought development in the areas of teaching and research. Initially, he thought about writing medical books but saw that "the pen was more difficult than the scalpel", so he realized that his work could also be disseminated through videos and live observation. Thus, he created Hernesniemi Fellows, an annual live microsurgery demonstration course in Helsinki that has accepted more than 3,000 visitors and 80 fellows who, together with him, have had the opportunity to register, observe and discuss his procedures. Many of these students were accepted

even though they presented a notable instability in the language and were able to dedicate time to learning in libraries or editing intraoperative videos. The willingness of thousands of people around the world to go to Helsinki to see Juha Hernesniemi's brilliant performance attests to the greatness of the procedures performed by him, which made his work a unique art⁸.

He has given more than 1000 lectures, had more than 600 publications collected, and won several awards. The prestigious World Neurosurgery magazine has selected Hernesniemi as one of the 56 most important neurosurgeons in the world². He has reached more than 500 articles included on PubMed⁵. In addition, much of his work has been gathered in more than 1100 carefully edited videos, some in short versions and others in longer versions, which demonstrate much of the surgical techniques he has learned in his career. They are masterpieces of surgery done by a master surgeon⁸. Helsinki Microneurosurgery Basics and Tricks, written by Professor Juha in collaboration with his colleagues, has influenced many neurosurgeons around the world⁴.

Hernesniemi has always been intensely involved in daily scientific work. Known for being the fastest neurosurgeon in the world, he directly influenced the rhythms of surgery, replacing the policy of more conservative treatment with a more active attitude in an attempt to save critical patients, which often became successful⁴.

The Neurosurgery Department at the Central Hospital of the Helsinki University, Finland, is a sacred place that any neurosurgeon, interested in cranial neurosurgery (mainly vascular neurosurgery), has to visit⁴. Hernesniemi and his team can dissect a surgical operation (especially intracranial aneurysms – AIC's) in the different individual components, eliminating any waste and obtaining exceptional results⁸. Hernesniemi conducts neurosurgery like a real maestro. The emphasis on teamwork with high precision allows the procedures to be as efficient and safe for patients as possible, increasing the chances of better outcomes⁴.

In 2015, at the age of 68, the legal retirement age limit in Finland, he had retired from Hospital Töölö. So he went abroad looking for his home and for what he is addicted to: the operating room. As long as he is well and able to operate, he does not intend to stop². Hernesniemi (Figure 2) seeks to remain in standing position during all surgeries, except for the bypass ones, and he values good physical conditioning as an important characteristic for a neurosurgeon⁸.

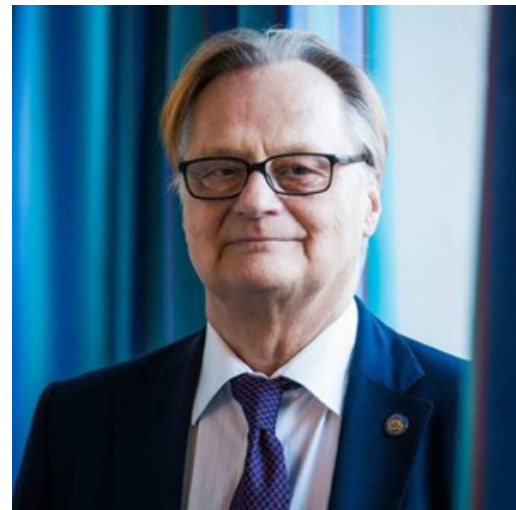


Figure 2. Prof Juha Hernesniemi. Credit: Ignite NSC Journal, 2022⁹.

For Hernesniemi, hospitals are places where you can directly see the heart of a society. During his stay in Nepal in 2017, where he worked at the Nobel Institute for Neuroscience, the poverty of the place made him reflect on the importance of his work. “What’s the use of neurosurgery if patients can’t pay for it?”; “Confronting death every day in your work is a great challenge that is never left behind.”; “The older you get; the more these distant flaws weigh”; “Whoever is not afraid of surgery; is in the wrong area or does not speak the truth”; “I never understood life or death; as everything happens. After all; we were born here without understanding and we died with a question mark on our lips”. “There are three things that belong to a good neurosurgeon. You have to be a good doctor, a good neurosurgeon, and a good person -- a good human being. The latter is the most difficult. It is necessary to treat patients and other human beings with respect”².

For twenty years, Hernesniemi has made trips abroad, approximately forty, choosing his destinations from what seems convenient, always considering the conditions of the place in order to teach other neurosurgeons. According to him, “if the country is restless or lacks basic living conditions and the level of hygiene is precarious, there is no point in having brain surgery”. However, in his experience, he realized that most countries are in a better condition than that imagined in Finland, which facilitates his project for the dissemination of knowledge¹⁰.

In January 2016, Hernesniemi said in an interview published in the Central Ostrobothnia supplement Keparri: “I have no intention of quitting my job yet. In my opinion, the retirement age in Finland is very

low". Therefore, he opened a clinic in central China, where he currently works and believes he will continue for at least the next five years¹⁰.

In December 2017, Hernesniemi established the basis for JuhaH International Neurosurgical Center in Zhengzhou, Henan Province, China, after signing a full-time, 3-year contract with Henan Provincial People's Hospital⁵. That was a new step into his passion for medical sciences and education⁵. For him, medical education is about inheritance: the promotion of knowledge from predecessor to young people⁵. The first Shaolin International Neurosurgical Conference and 2018 Central China Cerebrovascular Disease Forum, presided by Hernesniemi, are a clear hallmark of his superb interest and commitment in advancing neurosurgical fields all over the world⁵. The world of neurosurgery is also fortunate enough to have several current live lectures and lessons presented by Hernesniemi, like "Life in Neurosurgery" (2020)¹¹ and Juha's Neurosurgery Grand Round (2021)¹².

Juha Hernesniemi's legacy of neurosurgery resonates around the world. His work has influenced and continues to influence the practice of many neurological surgeons, contributing to the improvement of procedures and quality of life for patients.

CONCLUSION

Juha Hernesniemi is one of the most important neurosurgeons in the world, according to World Neurosurgery magazine, and after him the rhythms of surgery completely changed in the world to an active way. He is a pioneer of early aneurysm surgery and a big influence on modern neurosurgery. His contribution to a better medical practice is also evident in education, through the creation of a course which allows students to participate and discuss the procedures. Furthermore, with more than 600 publications, Hernesniemi is a true maestro in the surgical center and the fastest neurosurgeon in the world today.

REFERENCES

1. Alchetron. Juha Hernesniemi. Available from: <https://alchetron.com/Juha-Hernesniemi>. Accessed: 8/20/2021.
2. Marjanen A. World-renowned neurosurgeon Juha Hernesniemi, 70, continues to operate: test your ability to work standing with your hands every morning. Available from: <https://www.aamulehti.fi/hyvaelama/>
3. Braun Melsungen B. Visitant Professor 2009 - Prof. Dr. Juha A. Hernesniemi, M.D., Ph.D. Available from: <https://www.bbraun.co.za/en/products-and-therapies/neurosurgery1/visiting-professor-at-the-charite/visiting-professor-2009.html>. Accessed: 13/4/2022.
4. Martin L, Aki L, Ricardo A, Juha H. Helsinki microneurosurgery basics and tricks. 1st ed. Helsinki: Helsinki University Hospital; 2011. 343 p.
5. Aesculap Academy. Juha Hernesniemi - Shaolin Neurosurgical Master Training Class. Available from: <https://www.medmeeting.org/newsinfo/20060>. Accessed: 8/6/2020.
6. Uconn Health. Juha Hernesniemi, M.D., Ph.D. Available from: <https://health.uconn.edu/neurosurgery/our-team/juha-hernesniemi-m-d-ph-d/>. Accessed: 8/2/2020.
7. Tekniikan Maailma. Neurosurgeon Juha Hernesniemi, who moved to China, praises coronary actions in Finland. Available from: <https://tekniikanmaailma.fi/kiinaan-muuttanut-aivokirurgi-juha-hernesniemi-kehuu-suomen-koronatoimia-teki-hallitus-mita-hyvansa-aina-naakkaparvi-reagoi/>. Accessed: 8/19/2020.
8. Juha H. Choque-Velasquez Joham, Kozyrev Danil, Thiarawat Peeraphong. Hernesniemi's 1001 and more microneurosurgical videos. 1st ed. Helsinki: Helsinki University Hospital; 2017. 193 p.
9. Hernesniemi J. Experiences in microneurosurgery since 1973: some career advice to young neurosurgeons. Ignite NSC Journal [Internet]. Available from: <http://ignitethejournal.net/article.php?volume=1&issue=juha&article=experiences-in-microneurosurgery>. Accessed: 13/04/2022.
10. Keskipohjanmaa. Neurosurgeon Juha Hernesniemi from Kannus continues his career in China. Available from: <https://www.keskipohjanmaa.fi/uutinen/539398>. Accessed: 8/19/2020.
11. Aans Enmh. Juha Hernesniemi: life in neurosurgery. Available from: https://www.youtube.com/watch?v=_N7_9jEos8o. Accessed: 6/12/2021.
12. Neurosurgical TV. Juha Hernesniemi China Neurosurgery Grand Rounds Hanuary 22, 2021: present state of Dural Arteriovenous fistula treatment. Available from: <https://www.neurosurgical.tv/in-less-than-3-hours-juha-hernesniemis-china-neurosurgery-grand-rounds-with/>. Accessed: 6/12/2021.

CORRESPONDING AUTHOR

Karoline Schereck Kreitmeyer, MD
Medical Residency in Neurosurgery
Neurosurgery Department
Irmandade Santa Casa de Limeira
Limeira, São Paulo, Brazil
E-mail: ksch27@hotmail.com

Funding: nothing to disclose

Conflicts of interest: nothing to disclose