Akira Takeshita, MD, PhD

1940–2009

Shin-ichi Ando, MD; Tsutomu Imaizumi, MD*

Akira Takeshita, MD, PhD, Professor Emeritus of Cardiovascular Medicine and Director Emeritus of the Institute of Angiocardiology, Kyushu University Graduate School of Medicine passed away on March 15 at the age of 69 after a long battle against a disease.

Dr Takeshita was born in 24 January, 1940 in Seoul and raised in Kumamoto, Japan. Immediately after graduating from Kyushu University of Medicine in 1965, he moved to Tachikawa US Air Force Hospital and his worldwide career as a clinician and researcher started at this American military hospital as an intern and resident. At that time, Dr Takeshita had the good fortune to meet a young medical student (who later became an anesthesiologist), Makiko, whom he married in 1968. For the next 41 years, until the last moment of his life, they had a happy life together with their 3 children. In 1968, Dr Takeshita left Japan for the USA, where he took the internal medicine residency course at Mount Sinai Hospital in Cleveland, Ohio. After completing his residency there, he was appointed a cardiology fellow at the Department of Internal Medicine at the University of Iowa in 1970 and spent three years there. At that time, the University of Iowa had become an outstanding research center in the field of neural control of the cardiovascular system. Under the guidance of Drs Allyn L. Mark and Francois M. Abboud, Dr Takeshita studied practical investigation methods as well as the way clinical researchers should conduct themselves. Dr Takeshita returned to Kyushu University in 1973 to establish a new era of research in cardiovascular medicine in Japan. He received his PhD degree at this time! In 1976, he returned to the University of Iowa as an assistant professor to study hypertension in both human and animal models^{2,3}

In 1980, Dr Takeshita was appointed associate professor of the Department of Cardiovascular Medicine, Kyushu

University, where he started research mainly on the arterial and cardiopulmonary baroreflex, especially on the mechanisms of the control of cardiovascular system by the afferent pathway covering widely from animal to human. In 1990, he was promoted to the positions of Professor and Chairman of the Vascular Medicine Department and Director of the Institute of Angiocardiology. During the following 13 years, under his leadership, the Department of Cardiovascular Medicine and the Institute of Angiocardiology at Kyushu University became one of the leading research and training centers in the world. After his retirement from Kyushu University in 2003, Dr Takeshita served as President of Aso Nursing School until 2007. From 2007 to 2009, at Saiseikai Futsukaichi Hospital, he worked as an adviser to the cardiovascular clinic, was involved in the training of interns and undertook clinical research.

Professor Takeshita served as President of the Japanese Circulation Society from 2002 to 2003, and as a board member of many worldwide scientific societies. Dr Takeshita also served as an editorial board member of many outstanding scientific journals in cardiovascular medicine including: *Circulation*, *Circulation Research*, and *Hypertension*. He became the first Asian

Editor of Arteriosclerosis, Thrombosis, and Vascular Biology in 1999 and remained in this position through 2007.

On the basis of his research at Iowa University, Dr Takeshita studied the neural and humoral controls of the cardiovascular system in animals and human volunteers or patients at Kyushu University. During these studies, he simultaneously recorded the neural traffic electric activities to and from the central nervous system and the hemodynamic parameters. This was the key point in many animal studies at the early phase of his research work at Kyushu University. Many young researchers trained under his supervision to learn these special techniques and a great deal of successful research was continuously produced from this small but powerful laboratory⁴ For the human baroreflex studies, he made a lower body suction box and installed it in a tiny room in a corner of the cardiovascular ward. The lower half of the human body was positioned in this box, whereupon negative pressure was applied to activate the sympathetic nervous system through baroreflex while measuring hemodynamic parameters such as forearm

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blood flow or venous distension using special devices made of thin tubing containing mercury.⁵ Because his focus was always the control of resistant arterioles, human forearm vasculature was the target when elucidating the effects of many hormones such as human natriuretic peptides.⁶ Dr Takeshita was given the Beltz Prize for outstanding work in the field of atrial natriuretic peptides in animals and humans.^{7,8}

After becoming a Professor, Dr Takeshita expanded his range of research to nitric oxide, Rho-kinase, intracellular signal transduction and oxidative stress, as well as establishing a new methodology in the research of the neural control of the cardiovascular system, especially in the central nervous system.^{9–14} As the result of his enthusiasm, 95 young physicians were able to attain their PhD degrees thanks to his world-level guidance, and 6 of them became professors or chairmen at various departments of internal medicine or related areas in Japan over a 13-year period.

Even after retiring from Kyushu University, he continued his passion for education at Aso Nursing School, where he raised the pass rate for the National Nurse License Test to the top rank in Japan. Likewise, Dr Takeshita continued to organize clinical research at Aso Nursing School and Saiseikai Futsukaichi Hospital. As his final study, Dr Takeshita and his group found that abnormal baroreflex response in HR before blood donation would suggest serious adverse reaction after blood donation and that water ingestion could prevent the vasovagal response.¹⁵

Dr Takeshita had a deep love for patient care and teaching young people, including the doctors, nurses and technicians who had contact with him. Time permitting, he would make every possible effort to help anyone. In clinical situations, he made all the decisions and performed treatments as quickly as possible. Nevertheless, he was always very humble, and he had such a good sense of humor that not only his patients but any person who came into contact with him became a sincere admirer. He always taught the young doctors or even senior doctors that doctors should always think not only about the feeling or even the social environment of their patients, but also about the family of their patients. Dr Takeshita also always told the young researchers that if their work could be done at home to take it back home and do it while with their family. One of Dr Takeshita's major messages for us doctors might be that the family is of the utmost importance and that we should strive for a firm and comfortable relationship with our own family members. His way of life as a medical practitioner and researcher was passed on in various forms to the succeeding generations.

Just after his death, Dr Takeshita's wife, Makiko, described his character as that of a "Higo Mokkosu (a stubborn man of Kumamoto)". This means that, once he believed that it was worth doing and that it would help the patients or people of the world, Dr Takeshita did everything straightaway without being affected by anything. This really was

his way of life and it had a strong influence on many younger doctors and colleagues. We all truly feel that it was our great fortune to have known him, be taught by him and work with him.

For another aspect of the life of Dr Takeshita, please refer to another memoriam manuscript by Drs Shimokawa and Heistad.¹⁶

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