



75

My career in medical research

S Sandhyamani

I was very lucky to be educated without interruption in my studies unlike my mother, Pushpa, and be the first lady doctor from my family. My father, Dr. Sriramachari, who specialized in Pathology, became a medical research worker of repute and continued active research till the age of 84 till his sad demise. I had the privilege of learning my alphabets from Master N. Sitaramayya, who taught Sir C.V. Raman during his school days.

My earliest recollections of my father's lab in Nutrition Research Laboratories, Coonoor were of the smell of formalin, alcohol and xylene, the microscope, and experimental animals. My father introduced me to the fascinating and fantastic world of microscopy. Besides his work on nutritional liver diseases and later, neuropathology, he was deeply involved in research on polarization microscopy and photomicrography. I was so awestruck by his knowledge of physics and chemistry that I developed diffidence for these two subjects. However, I always wanted to emulate my father. Along with my father's advice, my maternal grandfather's astrological prediction that I would take up medical research linked to my father's work, also helped me take the decision to pursue a career in medical research. I studied MBBS at Maulana Azad

Medical College, New Delhi; I chose to do postgraduation in Pathology.

As a postgraduate student at All India Institute of Medical Sciences (AIIMS), New Delhi, I had the unique opportunity of learning pathology from my teachers in the Pathology Department and from my father, Director, Institute of Pathology. Postgraduation at the Pathology Department at AIIMS, was a very exacting and intense course of two years that shaped us into sound, all-round pathologists. There were no didactic lectures and we were expected to absorb and acquire knowledge through routine work. Research was just woven into it. Together with my father, I developed a better fat-staining technique and an improved recolorization technique for museum specimens, later published in the oldest pathology journal 'Virchows Archive'.

Within six months of starting my postgraduation, there was a major catastrophe in our family. My mother suddenly died of a medical accident. It was my father who advised me against having a break in my studies and who helped me cope with the demands of departmental work and duties as well as managing the house. I learnt from him that immersing oneself in research was an important way for de-stressing.

After working as a Senior Resident and Research Associate in the Pathology Department at AIIMS, I was reluctant to get married and leave Delhi. After a lot of persuasion by my father, I married Alwan, a chemical engineer at the Vikram Sarabhai Space Centre, Trivandrum, Kerala. I joined the Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Trivandrum, as a Lecturer in the Department of Pathology. While conducting autopsies, I identified a new vascular disorder in young individuals, which I named "Muroid Vasculopathy". Affected blood vessels were narrow, resembling rubber tubes and blocked by blood clots and muroid plaques rather than fat and cholesterol as seen in atherosclerosis. Using low-protein high-starch diets similar to what was eaten by the patients, I developed a monkey model, which conclusively showed that such nutritional imbalances were indeed responsible for this condition, changes in other organs, biochemical parameters and associated type of metabolic syndrome.

Incidentally, this monkey model was an extension of primate experiments using protein deficiency carried out by my father in 1957. My recent studies have revived the pathology of rheumatic heart disease proposed by earlier pathologists, which was forgotten in the last fifty years. I have now embarked on a detailed study on rheumatic heart disease and on toxico-nutritional or lifestyle-related diseases at my institute.

My studies on patients and the monkey model thus helped me to define four important areas of work pertaining to nutritional disorders: vascular diseases, endomyocardial fibrosis, rheumatic heart disease and diabetes mellitus of different forms.

Louis Pasteur said, "Chance favours the prepared mind." I am grateful to all my teachers, especially, (late) Dr. H.D. Tandon, former Director AIIMS and Head, Department of Pathology, for the excellent training I received. My work was well appreciated by senior pathologists from India and abroad, such as (late) Dr. Suman Kinare, Dr. B.N. Dutta, Dr. Prem Chopra, Dr. M. Balaraman Nair, (late) Dr. C.W.M. Adams and Dr. Malcolm D. Silver.

Dr. G.B. Parulkar, (retired) Cardiovascular and Thoracic Surgeon, KEM Hospital, Mumbai, introduced my work to the international arena at the World Congress of the International Union of Angiology held in Paris in 1992, where I received the 2nd IUA prize for my monkey model for mucoid vasculopathy and associated heart and endocrine organ changes. This was followed by a series of national awards and one from my institute. My work was published in a number of international journals of repute, many as single author publications. I am extremely grateful to Dr. B.G. Harigopal, Advisor, DST, New Delhi, for smooth coordination of my two projects on mucoid vasculopathy and the monkey model. My project team with Ms. Vijayakumari and animal handlers worked tirelessly to look after the experimental monkeys.

When I discovered mucoid vasculopathy and associated conditions in the autopsies, I had to face considerable skepticism from some of my professional colleagues. My monkey model drew intense ridicule, derision and criticism from some of my peers and fellow pathologists. The intensity of such reaction was directly

proportional to the importance of my work, my results and the acclaim I received. I was, therefore, delighted to learn from the pathologists from Uganda and South Africa that the disease patterns in their countries were indeed identical to those encountered by me in Kerala. My greatest moment was when I received a letter from Dr. J.N.P. Davies who had studied the effects of severe forms of malnutrition in Ugandan children and discovered endomyocardial fibrosis in the middle of the last century. He concurred with all my findings in the human disease and the monkey model.

I was the first Asian and only woman scientist after 30 years of the apartheid era to deliver the Bunny Becker Memorial Lecture in South Africa on invitation by Dr. Kum Cooper. There is a famous Sanskrit *shloka* I learnt in school, “*vidwatwam cha nripathwam cha naiva tulye kadachana, swadeshe poojyate raja, vidwan sarvatra poojyate*” (A king and a scholar cannot be compared, the king is worshiped only in his country, the scholar is revered all over the world).

My father who passed away recently, had always been a role model for me, giving advice on how to cope with the adversities and lean periods in ones work and sharing the excitement of each “bright idea.” My husband gave me tremendous encouragement in my research work and moral support during crises. My elder son, Aravind is an engineer, doing Ph.D. in nanotechnology in USA. My younger son, Anand, has just entered medical college. I was very lucky to have good domestic help throughout my career. I received immense encouragement from Dr. M.S. Valiathan and Dr. K. Mohandas, former Directors, SCTIMST, and my well-wishers. I am very grateful to the horde of skeptics, without them my hunger for scientific discovery would not have been stimulated.