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My Memories in Cardiac Electrophysiology

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Abstract: This article describes the author's academic and work experiences. The author's journey of learning began in Mexico, where not only did it ignite the author's passion for electrocardiography, but it also laid a solid foundation for the author's subsequent research achievements in the field of electrocardiography. Under the influence of the Mexican School, the author actively participated and contributed his own efforts, witnessing the flourishing development of Mexican cardiology and its profound impact internationally. Subsequently, the author brought this passion and expertise back to Colombia, dedicated to the construction of the cardiology laboratory, especially in the development process of Kahanal cardiology laboratory, where the author personally experienced every stage from start-up to growth. Kahanal Laboratory is not only the cradle of the author's scientific research, but also a witness to the author's series of important achievements. During this period, the author had the privilege of working with many important figures in the field of electrophysiology and experiencing a series of landmark events in the field together. The work experience at Kahanal has enabled the author to deeply participate in numerous medical experiments, further enriching the author's professional knowledge and practical experience. At the same time, the author continues to monitor the progress of the Shaio Clinical Foundation in electrophysiological research, as well as the latest developments and trends in the entire field of electrophysiology and cardiac stimulation.

Key words: electrophysiology; electrocardiography; memories

1. The Experience of Author in Cardiac Electrophysiology

I was fortunate enough to spend five wonderful and unforgettable years (1976-1980) in Mexico. In Mexico City, I received cardiology training at the National Institute of Cardiology (INC) and critical care medicine and intensive care training at the American British Cowdray Hospital. In that country, I am passionate about electrocardiograms and electrophysiology; The Mexican ECG school has gained global recognition [1, 2]. I don't know his main mentor, Dmitrio Sodi Parares, who has left INC, but other great figures in Mexican electrocardiography, Gustavo Medrano, Abdul Biseni, and Alfredo de Michili, are my teachers.

The first work I did in that world was related to the electrocardiogram findings of chronic lung disease, especially recurrent pulmonary thromboembolism. This was my dissertation with Dr. Victor Manuel Alatrist [3]. The other electrocardiogram work is a paper I published with Dr. Mario Shapiro [4] on the role of V3R and V4R precordial leads in acute right ventricular infarction.

2. Development History of Cardiac Electrophysiology in Mexico and Colombia

The contribution of Mexican schools in cardiac electrophysiology is significant. For example, in 1958, Jesus Aranes

and his collaborators described the electrical activity of HIS bundles in isolated and perfused hearts of dogs, and referred to it as potential H [5]. At that time, Dr. Paul Puech received training as a cardiologist at INC and then returned to his country of France. In 1960, at the Saint Eloy Clinic in Montpellier, accompanied by doctors Giroud and Latour, they first demonstrated the electrical activity of HIS bundles in humans [6, 7].

One of my Mexican roommates at INC, Dr. Jorge Vidal Galat, received cardiac electrophysiology training in France with Dr. Paul Puhe. He resonated with Dr. Manuel Cardenas, the head of the coronary artery care department, who is the author of the "Arrhythmia Handbook" [8], and successfully consolidated his idea of developing INC's first invasive human cardiac electrophysiology laboratory with basic equipment in a hall affiliated with the coronary artery department: portable image intensifiers, lie detectors, and programmed cardiac stimulators. Research is accidental. At that time, INC's dog experimental electrocardiogram laboratory had better rest rooms and equipment. Electrocardiogram is more important than electrophysiology.

Later, Dr. Luis Molina joined INC as a professor in 1980 and also received training as an electrophysiologist with Dr. Paul Puhe in Montpellier (1976-1979). His struggle was with the hemodynamic services department, but he successfully consolidated a room or laboratory dedicated to cardiac electrophysiology and began the formal training program for the profession.

At the end of 1980, I returned to Colombia and reflected on the present 40 years later (2020). What I did in my country was to repeat the history of Mexico.

I started working at the Santa Rosa Clinic (Kahanal) of the National Social Security Fund in Bogota, which is now the National University Hospital of Colombia. I worked as a cardiologist in the intensive care unit (ICU) and successfully transformed an annex room into an invasive cardiac electrophysiology room or laboratory, equipped with portable image intensifiers, lie detectors, and programmed cardiac stimulators; Similar to Doctors Vidal and Cardenas in Mexico. All of this is due to the enthusiastic and unconditional support of Dr. Eduardo Garcia Vargas, the director of the intensive care unit, and Dr. Enrique Alvarado Acevedo, the director of the cardiology department, in Kahanal.

One year later, the first hemodynamic room of the institution was completed in Kahanal, equipped with very modern equipment and allowing me to conduct electrophysiological research there. The history of Kahanal Electrophysiology Laboratory can be divided into two stages. The first stage was from 1981 to 1982, characterized by arranging and purchasing equipment (lie detectors, stimulators, catheters, etc.) in the room, conducting some electrophysiological research, and training nursing and medical staff. I went to Mexico City with Dr. Luis Molina, to Montpellier with Dr. Paul Puhe, and to the Southern General Hospital in Maracaibo, Venezuela with Dr. Bolivar Portillo, where I served as a visiting professor. The second stage, starting from August 1982, had complete necessary equipment and appropriate physical devices, and was a regular and continuous operation phase, with an average of two electrophysiological studies conducted per week. Dr. Alcides Horton and Dr. Alberto Quintero provided an admirable collaboration in the fields of hemodynamics and cardiology in Kahanal. This is the story of the first regularly operating cardiac electrophysiology laboratory in Colombia [9].

The first scientific work conducted in Kahanal was to search for sinus node disease in 30 patients with sinus bradycardia, and to conduct electrophysiological research on sinus function and invasive atrial ventricular conduction testing and persistent ventricular tachycardia similar to what I presented today at the 7th Colombian Congress of Internal Medicine held in Medellin in October 1982 [10]. He had 9 patients and gave a speech at the 8th Colombian Congress of Internal Medicine held in Barranquilla in October 1984 [11]. At the Colombian Congress of Cardiology, they awarded us for our work on the electrophysiological effects of magnesium sulfate on humans [12].

In 1983, when I visited the electrophysiology service at the University of Alabama at Birmingham, led by Dr. Albert Waldo, I met Dr. Alvaro Mesa Arroyev, a Colombian doctor who had received cardiology training at the National Institute of Cardiology in Mexico and was a researcher in electrophysiology at the time. Dr. Mesa returned to Medellin and started the second existing electrophysiology laboratory in Colombia in 1985 at the "Santa Maria Clinic", today's cardiology clinic [13].

At the end of 1981, while working in Kahanal, I began to serve as the head of the intensive care unit (ICU) at the Shaio Clinic Foundation in Bogota, on the condition that I was allowed to work in electrophysiology at Kahanal while implementing this profession at Shaio. The process is very slow. In the intensive care unit, my students, followed by colleagues Marco Pelafan and Daniel Isaza, supported my trip to Kahanal. At La Shaio, they provided the oldest room for my electrophysiological experiments in the hemodynamic service, and in the radiology service, I conducted my first tilt or tilt table test in Colombia on a table that could tilt 60-70 degrees [14]. We conducted preliminary experience with direct current electric shock or ablation of HIS in cases of Cajanal and Shaio (1989-1991). Then RF energy ablation was performed.

In 1991, everything changed when the Shaio Clinical Foundation, a pioneer and professional institution in cardiovascular disease, purchased a modern Mingograf 7 lie detector, 5326 Medtronic stimulator, and catheter needed for electrophysiological research from Siemens. In March of the same year, I began conducting regular (almost daily) electrophysiological research at SHAIO. The first full-time chief nurse who accompanied me for electrophysiological examination was Louisa Lavilde. In 1994, Dr. Fernando Rosas joined this service after completing graduate training in electrophysiology with Dr. Guy Fontaine and Dr. Robert Frank at the Jean Rostande Hospital in Paris, France. Since then, we have been working as a team.

3. Future Development Direction of Cardiac Electrophysiology

In recent years, the development of electrophysiology and cardiac stimulation in Shaio, Colombia, and around the world has been impressive, which will be the topic of another article. In this job, I just want to document my initial experiences.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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