

EDITORIAL

NEPHROLOGY AT HOSPITAL MILITAR CENTRAL OF BOGOTÁ: 50 YEARS

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Introduction

In 2012, the Division of Nephrology at Hospital Militar Central (HMC) of Bogotá will complete fifty years of its creation and to commemorate this date we have carried out a review of the history of the Nephrology Division at HMC and the high impact it has had on the development of the nephrology in Colombia.

The Division of Nephrology at HMC was created in 1962 by the teacher and professor José María Mora Ramírez, formerly linked to the hospital since 1955 as Chief of the Internal Medicine Department and after receiving training in nephrology at Cleveland Clinic with Willem Kolff, father of the artificial kidney. According to the aforementioned, during these five decades the department and those who have constituted it have been guidelines and bastions in the development of Colombian nephrology which they have deeply influenced, and have shaped a great deal of nephrologists who have their specialty practice in the country.

Initiation of the Nephrology in Colombia

In order to locate the initiation of the nephrology at HMC of Bogotá in 1962 within the worldwide and national setting, we should remember that the specialty was born as a scientific discipline in 1960 during

the first International Nephrology Congress in Evian, France. In North America, after a slow development of the nephrology by the 1940s, it was defined as an independent specialty by the mid-1950s and was born as a subspecialty with the creation of the National Kidney Foundation in 1960.

Almost simultaneously, in the 1960s decade, the nephrology as a subspecialty was initiated in Colombia. By the same time, eight Colombian internists were trained in nephrology in the United States and Mexico and returned to Colombia to create the subspecialty. One the first poles of the development of the nephrology was the HMC of Bogotá, under Dr. Mora's direction.

Mora contacted Kolff after his visit to Colombia as invited Professor to the Clínica Shaio in 1961, since he wished to be trained in nephrology. It became reality and he obtained his nephrology fellowship headed by Kolff in the Department of Artificial Organs of Cleveland Clinic Foundation and Western Reserve University. He returned to Colombia in 1962 and became the creator and first chief of the Division of Nephrology at HMC and gets to be, in our opinion, the father of the nephrology in Colombia.

A few months or years later, other specialists arrived to create the departments of nephrology at the hospital

San Juan de Dios of Bogotá, San Vicente de Paúl of Medellín and Universitario del Valle, the latter by 1965. Three cities, four hospital centers and eight acknowledged nephrologists were the foundation of the nephrology in Colombia by the 1960s making clear that many of them, such as Doctor Jaime Borrero Ramírez in Medellín and Mora himself in Bogotá, already had stepped forward in the management of renal diseases in Colombia before going overseas to specialize.

The Colombian Nephrology Society, presently Colombian Association of Nephrology and Hypertension was created in 1966 in Bogotá. From the HMC group and its graduates, Doctors José María Mora Ramírez, Hernán Torres Iregui, Eduardo Carrizosa Alajmo, Roberto D'Achiardi Rey and Germán Gamarra Hernández were presidents of the Society.

Nephrology at Hospital Militar Central of Bogotá

The Division of Nephrology at HMC, the first created in the country, was initiated by Dr. José María Mora who was its chief between 1962 and 1970 when he was designated chief of the Department of Internal Medicine. He was substituted by Hernán Torres, also trained in nephrology at Cleveland Clinic, who took the leadership of the Division from 1970 to 1977 when was designated chief of the Internal Medicine Department.

In 1973, Torres created the two-year training program in nephrology at HMC, homologated by the Colombian Society of Nephrology when the specialty wasn't even acknowledged in Colombia. Indeed, by that time the Society of Nephrology granted us the diploma as members of number, credential that was used for practicing nephrology in Colombia.

In 1975, Eduardo Carrizosa was graduated, becoming the first certified nephrologist trained in Colombia who was called to create the specialty and, in turn, he created the third school of nephrology of the country in 1981 at Hospital Universitario San José with the Universidad del Rosario, presently with the Fundación Universitaria de Ciencias de la Salud.

In 1978, Juan Daniel Ordoñez Ordoñez, trained in nephrology at Louisiana State University, who came from Charity Hospital New Orleans, was designated

chief of the Nephrology Division and took the leadership up to 1981 when he returned to the United States to join the Kayser Foundation in Oakland, California. In 1977, the second nephrologist of the HMC School obtained his degree:

Roberto D'Achiardi, who joined the Nephrology Division of the institution and then obtained his nephrology fellowship at Cincinnati General Hospital and University of Cincinnati with Victor Pollak; he came back in 1982 as chief of the HMC's nephrology division. By 1982, the specialty at HMC and the Militar School of Medicine were licensed by Ascofame, the first nephrology specialty licensed in Colombia. In March 1988, he moved to the Hospital Universitario San Ignacio and Pontificia Universidad Javeriana to lead on the nephrology division, and in the same year he created the fifth nephrology school of the country, officially licensed in 1990.

The second School of nephrology at Hospital San Vicente de Paúl of Medellín, with the Universidad de Antioquia was created in 1975 by Jaime Borrero. The fourth school was founded in the Hospital Universitario del Valle with the Universidad del Valle, by Álvaro Mercado Juri.

The other three nephrology postgraduate programs were created as stated below: the sixth school in 1998 at Hospital Clínica San Rafael with Juan N. Corpas School of Medicine by Mauricio Sanabria Arenas, graduated from the HMC's School; the seventh school at Fundación Cardioinfantil with Universidad del Rosario in 1999 by Jesús Muñoz Silva, and the last one by Mauricio Uribe Betancur in Medellín in 2001, at Clínica Universitaria Bolivariana presently Hospital Pablo Tobón Uribe with Pontificia Universidad Bolivariana.

Retaking the history of the HMC's Division of Nephrology, from 1988 to nearby 2000, Dr. María Elvira Martínez Rondanelli took the leadership of the Division and then she was designated scientific assistant director at HMC being substituted by Manuel Ruiz in the direction. Finally, since 2008, the renal unit operates in agreement with Baxter, being inaugurated a modern renal unit in January 19, 2009. Between 2007 and 2009, the Division has been headed by Hildebrando Leguizamón Sendoya, nephrologist graduated from Universidad Javeriana and José Manuel Arboleda Vallecillas, graduated from HMC.

Since July 2010, the Division of Nephrology is being headed by Jorge Echeverri Sarmiento, graduated from Pontificia Universidad Javeriana and Hospital Universitario San Ignacio, with postgraduate studies in 2009 in Critical Care at Austin Hospital, in Melbourne, with Rinaldo Bellomo; Dr. Juan Guillermo Vargas, also graduated from Universidad Javeriana, is his assistant.

Graduated Nephrologists

At the beginning, the nephrologists were trained at HMC which is the Medical Center of Graduate Studies, and years later, after the official licensing of graduate degree in nephrology in the country, at the Militar School of Medicine, presently Universidad Militar Nueva Granada.

Forty eight nephrologists have been graduated; following Eduardo Carrizosa and Roberto D'Achiardi, they were in an orderly fashion: Germán Gamarra, Germán Durán, Álvaro Ordóñez, Gustavo Aroca, Carlos Prada, Ramón Duque, Luis Castillo, Hernando Giovanetti, John Serna, Andrés Díaz, Mauricio Sanabria, Enrique Klahr, Martha Medina, Robert Briceño, Rafael Rodríguez, Hernando González, Mauricio Nieto, Iván Nieto, Manuel Soto, Armando Ramos, Ignacio Villanueva, Amalfi Charry, Erika Yama, Amable Durán, Andrés Soto, David Camargo, Yelma Osorio, Layla Tamer, Amauri Ariza, Manuel Ruiz, Edgar Tinjacá, Jorge Van Arken, José Manuel Arboleda, Luis Cano, Luis A Cely, Elkin Machacón, Jesús Morales, Edwin Hernandez, Jose Javier Ayala, Fredis Miguel Baloco, Jorge Antonio Mora, Sonia Celis, Fabián Barrios, Rodrigo Daza, Mario Javier Serna and César Mercado. All of them have their nephrology practices within the highest scientific, ethical and personal standards in various cities of the country. Currently, 4 fellows are being trained: Mauricio Moreno, Gustavo Quiróz, Jaime Echenique and Alejandro Camargo.

Pediatric Nephrology

The development of pediatric nephrology at HMC was in a certain way in tandem with the adult nephrology and has played an important role in the country. The Division was created by Jorge de la Cruz París in 1961, after receiving training in Mexico with Gustavo Gordillo Paniagua; subsequently, de la Cruz trained Erika Cuervo who was chief of the Division between

1977 and 1980 being substituted by Ricardo Gastelbondo Amaya, also trained in Mexico by Gordillo, who took the leadership from 1980 to 2000 when he left, being replaced by Oscar Hernández Rodríguez who is in charge up to this day.

Gastelbondo founded the first Pediatric Nephrology School in Colombia with Universidad del Bosque at Fundación Cardioinfantil, which was licensed in 2000 and accepted residents as from 2002, being the first one Luz Stella González. Then, almost simultaneously, the Pediatric Nephrology School was created in Medellín by Juan José Vanegas at Hospital Pablo Tobón Uribe with Pontificia Universidad Bolivariana.

Acute Peritoneal Dialysis

Within the formal establishment of clinical nephrology in Colombia, José María Mora performed in 1962 the first acute peritoneal dialysis (APD) at HMC, modality of therapy that was used routinely from that time on in patients with acute renal insufficiency, by that time with the standard technique, rigid catheter, open system, using dialysis fluid bottled and then contained in plastic bags with Travenol technology. Since that time, other hospital institutions in the country started the program using the same technique up to end of the 1980s when the pharmaceutical companies stopped manufacturing rigid catheters which contributed to the abandonment of APD until recent years when this therapeutic option is getting to be used in ARI based on the same devices used for chronic peritoneal dialysis (CPD) which is being performed once again at HMC since 2008.

It should be noted that in Colombia, the first APDs with "paisa" technology were done in Medellín in 1960 by Álvaro Toro Mejía and Jaime Borrero.

Chronic Peritoneal Dialysis

The CPD in the mode of continuous ambulatory peritoneal dialysis (CAPD), was initiated at Hospital San Vicente de Paúl of Medellín by Jaime Borrero's group in March 1981, and several months later by the groups of Eduardo Carrizosa at Hospital San José and Roberto D'Achiardi at HMC of Bogotá. Next, it started to become routine therapy for the management of chronic renal disease patients in the country. Since 1994, we have the automated peritoneal dialysis (APD). In 2008, the prevalence of

CPD patients was 6478. With a population higher than 46,294,841, it is estimated that near 22,000 patients are on chronic dialysis from which around 40 % receive CPD.

Acute Hemodialysis

Mora brought the first Kolff artificial kidneys to Colombia for HMC and Clínica Shaio of Bogotá. He performed the first acute hemodialysis (HD) in Colombia on a teenager, who nowadays is a Cardiologist, who had ARI following an aortic coarctation surgery at Clínica Shaio in June 1963. In this first procedure he was assisted by Dr. Gustavo Restrepo, Cardiologist, who had received temporary training in nephrology at Cleveland Clinic while he was awaiting the initiation of his Cardiology postgraduate program. As an anecdotic fact, not being the water suitable for the dialysis performance, it was necessary to call the fire truck which provided the best quality water for that time and location through a second floor window, being necessary for the fire truck to wait up for two hours in order to provide the water for the second exchange. The above because in that time, the tank was filled from the "pot", as was popularly called the Kolff kidney, with 120 liters which were to be exchanged two hours later in order to complete the four-hour dialysis.

At HMC, Mora performed the first acute HD on August 6, 1963, in a sixth floor room diagonal to his office, equipped for this purpose, site where many acute hemodialyses were performed (Figure 1) until the renal unit was inaugurated on the second floor of the hospital. Then, Enrique Carvajal Arjona and his group at Hospital San Juan de Dios of Bogotá and Jaime Borrero and Álvaro Toro at San Vicente de Paúl of Medellín did the same.

By this time, once the decision of performing the dialysis was made, the nephrologist placed surgically the Schribner shunt, usually in the forearm, which got coagulated or infected with relative facility. Subsequently, and for several years two vascular catheters placed by puncture in the femoral vein were used, which were removed after each procedure, and even were reused some times by leaving them into a formol solution and years later into cidex in the intermediate period. The dialysis solution for Kolff kidney was prepared based on 120 liters of water to which salt 600 g / liter, sugar 750 g / liter, bicarbonate 250 g/ liter, potassium chloride, calcium and magnesium were added, that is, a "whole cooking recipe", which next was mixed with a plastic stick. If by mistake the order of the ingredients placement was altered, these elements became precipitated and it was necessary to empty the tank and start again. Upon two hours of the acute HD, the tank was emptied and the dialysis



Figure 1. Acute hemodialysis performed at HMC of Bogotá in the 1960s by Dr. José María Mora.

solution was to be prepared for the two remaining hours.

Usually, the patient was connected at 7:00 AM and the dialysis was ending by 12:00 midnight, in the early times with no nurse help. Upon ending, the catheters were removed and the artificial kidney was cleaned. The above mentioned makes contrast with the current management of the acute renal insufficiency with modern technology, being its treatment with acute HD a routine which will persist over time, with increasingly better technology along with the various current therapeutic options of continuous renal replacement (CRRT).

Continuous Renal Replacement Therapies

in addition to the routine management of acute renal insufficiency patient with acute HD and APD, currently several modes of CRRT are available such as continuous venovenous hemofiltration, high-volume hemofiltration, hemodiafiltration, isolated ultrafiltration, of which various procedures had already been performed at HMC, but which at present, specially since 2010 headed by Jorge Echeverri, are being performed routinely with more than 200 procedures per year. Similarly, other types of techniques of extracorporeal clearance are being used at HMC in patients with autoimmune pathologies, as it is the case with plasmapheresis or plasma interchange with more than 50 interventions performed in the last year.

Chronic Hemodialysis

Between 1956 and 1960 the chronic hemodialysis (HD) as a mode of therapy for chronic renal disease became widespread, favored by inventions such as the Schribner shunt in 1960 and the Brescia and Cimino arteriovenous fistula in 1964 in New York.

In Colombia, the chronic HD was initiated by 1967 in Medellín. Over there, the GRACEC (after the names Graciela and Cecilia, the first patients who used it) kidney was designed; likewise, at Hospital San Juan de Dios of Bogotá, followed by Torres at HMC of Bogotá in 1971, institution where as an anecdotic data, an artificial kidney built in Colombia by the engineer Jorge Reynolds for a relative who was on home dialysis was used temporarily.

Currently, in the Renal Unit at HMC there are available 28 points for state-of-the art technology artificial kidneys, performing chronic dialysis and follow-up for around 160 patients per month.

Renal Transplant

In 1953, the Hamburger group accomplished the first related donor transplant in París and in June 1954 the Merrill group performed the first identical twins transplant in Boston.

In Colombia, the pioneer of kidney transplant was Enrique Carvajal Arjona and his group at Hospital San Juan de Dios of Bogotá, who performed in 1965 the first four cadaveric transplants in Colombia. Later, the first kidney transplant regular program was created at Hospital San Vicente de Paúl of Medellín by Borrero, Toro and Jorge Luis Arango Acosta's Group who performed the first kidney transplant on August 29, 1973. This group continues actively transplanting and has had the assistance of Mario Arbeláez Gómez, Gonzalo Mejía and Jorge Henao, among others, over time.

In 1978 the second program of kidney transplant in the country was created at HMC, with Torres, Mora, D'Achiardi and Ordoñez, being the vascular surgeons Víctor Caicedo Ayerbe, Wilde Jiménez Urbano and Gilberto Clavijo Contreras, and the urologists Jesús Guzmán Charry and Jaime Cajigas Rodríguez, multi-disciplinary team that worked organized and efficiently for about 10 years up to 1988.

The first cadaveric transplant was performed urgently in a weekend to a football referee who was becoming quadriparetic due to neuropathy secondary to chronic renal disease, who after some complications was discharged and had a functional kidney for several years. Later on, other transplant groups were created in Colombia which have performed more than 3500 transplants all over the country.

Predialysis Consultation

When that mode of care was not used in the regular clinical practice, there existed for many years a hypertension clinic created by Torres at HMC, which operated during several years, and currently, there is the predialysis consultation clinic providing services

to near 200 patients, making contributions to the general practitioners and residents training by giving education about renal health promotion, prevention and CRD treatment in all its stages.

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