

Special Article

The History of Nephrology in Tunisia

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Introduction

Nephrology is a relatively recent speciality which was introduced in Tunisia during the nineteen-sixties by Professor Hassouna Ben Ayed. He introduced peritoneal dialysis, the artificial kidney and renal biopsy in the department of medicine of Charles Nicole hospital in Tunis. Prof. H. Ben Ayed received his nephrology training in Paris and was one of the first Tunisian doctors to practice nephrology medicine in Tunisia at a time when this speciality did not have an official existence. It was from his initial practice in Charles Nicolle hospital that nephrology care was spread to other university hospitals in Tunis, Monastir, Sfax and Sousse in addition to the many public and private centers of hemodialysis (HD) disseminated in the country.

The history of nephrology in Tunisia can be divided into three phases: the launching of the speciality in Tunis, the development of nephrology departments in different regions and the development of transplantation.

Nephrology in Tunis

Charles Nicole Hospital

After his appointment as head of the medicine department (ward 10-3) at Charles Nicole hospital in 1962, Prof. H. Ben Ayed introduced peritoneal dialysis in the management of acute kidney failure. Disposable rigid catheters were used to access the peritoneal cavity. The treatment at that time was performed using hand-made solutions prepared by Mrs Essafi, the hospital pharmacist. Dialysis continued for several days and allowed the department to save men lives.

In 1963, he introduced the first artificial kidney, known as the "tank of Travenol". Dialysis sessions lasted a dozen hours, and often began in the evening after Prof. Ben Ayed had finished his tasks for the day. He was assisted

by an anesthetist technician, the late Férid Akrouf. According to Prof. Ben Ayed, the first patient treated was a case of postpartum acute renal failure. I had the privilege, as a medical student, to accompany him during one of those night sessions. Vascular access was often achieved through hard denudation of the saphenous vein. The machine itself consisted of a 100 liter tank filled with tap water. To this were added the contents of packs of sodium chloride, potassium chloride, bicarbonate, calcium and glucose in powder form, also prepared by the hospital pharmacist. The dialyzer was a coil made up of a membrane wrapped on a core and supported by woven fiber glass screening. The volume of the coil and the lines was about 1200-1800 ml which mandated priming with the same volume of blood. In the event of repeated dialysis sessions, the patient was detached from the artificial kidney and the priming volume was drained into a container and refrigerated for future use. In addition to ordinary patients, well known characters, including an influential minister and a senior army officer had benefited from this therapeutic procedure.

In 1969, two years after the department was moved to another ward (M8) in the same hospital, another "Travenol tank" was acquired. Later, the hospital acquired another type of HD systems, "Drake Willock". This system functioned with the Kiil type plate dialyzers, which consisted of two layers bottled together to prevent blood expansion. Softened water was used soon thereafter followed by the introduction of reverse osmosis in 1971, long before several European departments. The dialysis concentrate was manufactured by the Central Pharmacy of Tunisia (currently SIPHAT).

Initially, the most commonly used vascular access in both acute and chronic patients was Scribner's arteriovenous shunt, which was an innovation at the time. Later, Dr E. Nabli and his surgical team started to fashion for chronic patients internal arteriovenous fistulae of the Cimino-Brescia type.

Prof. Ben Ayed managed and directed human resources, for a long time, with the assistance of Mr. F. Akrouf, the chief supervisor, and general physicians or other

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part-time consultants. In 1967, Dr F. Hafsia, who was an in-house doctor in this department, as well as Mr. F. Akrouf and Fatma, a young female nurse, were sent for a three-month training course in the department of Prof. P. Milliez in Paris. In 1968, Dr F. Hafsia and Dr S. Haddad were sent to Paris to train for the French Certificate of Special Studies "CES" in nephrology, which had just been created.

Initially, renal biopsies were taken surgically in collaboration with the surgeon urologist Dr J. Cuenant. Afterwards, percutaneous biopsies were taken using the Silverman needle by Dr S. Haddad and Dr A. Hachicha. The pathology slides were interpreted in the department of pathology by Prof. A. Chadli.

By the end of 1974, Dr H. Ben Maiz and myself, completed our nephrology training in France and joined the department as full time consultant nephrologists and teaching assistants. This gave the department a more marked orientation in nephrology.

In addition to his clinical activity, Dr H. Ben Maiz was entrusted with the task of setting up a nephropathology laboratory and I was put in charge of the dialysis and intensive care unit (ICU). Both units were organized as autonomous units with a separate head nurse for each. The ICU was developed and equipped with semi-automatic and automatic peritoneal dialysis machines. The introduction of central venous catheters simplified patients care and rendered it less painful. The HD unit served acute cases along with 12 chronic cases. It was extended and organized to accommodate a national chronic HD program.

In 1981, the HD and ICU units of the "M8" ward were moved to a new spacious and especially designed building and all the equipment was replaced. A program of intermittent peritoneal dialysis (IPD) was set up and later supplemented by the introduction of continuous ambulatory peritoneal dialysis (CAPD) in 1983. Dr T. Ben Abdallah provided the impetus to this program as well as to the plasma exchange therapy which was introduced in the same year. The nephropathology laboratory was empowered by the arrival of Dr F. Ben Moussa who took over after Dr H. Ben Maiz and a hypertension laboratory was set up by Dr A. Kheder.

Military Hospital of Tunis

For the two military patients who received chronic HD treatment in Charles Nicole hospital, the National Defence Ministry had provided a machine and filters

upon request. This encouraged us to propose the creation of a HD unit in the military hospital of El Omrane. This was set up in 1977 by the director of the hospital, Dr Ben Moussa, and under the responsibility of Dr M. Dhahri. Later, the military hospital was moved to new premises in Monfleury. When Dr M. Dhahri's retired, Dr J. Hamida was appointed head of HD department.

Private sector and reimbursement by social security funds (CNSS and CNRPS)

Along with the creation of the public healthcare structures, the issue of reimbursement of this heavy and expensive treatment by social security funds remained unresolved for a long time. It was due to the initiative of one of our previous HD patients who received a transplanted kidney, that the first private HD center was established in Tunis. As the manager, he acquired reimbursement for the treatment from social security funds for the first time in the field. After long and hard discussions, in June 1976, the two national funds, CNSS and CNRPS, agreed to reimburse the treatment provided by affiliates in the private sector under certain conditions. This was an exceptional provision which made it possible to treat chronic renal failure patients in the private sector.

Previously, because of the concentration of renal care in the Capital, the situation remained difficult for patients in remote areas. However, the implementation of the social security agreement to reimburse treatment in the private sector stimulated the creation of a HD center in Sousse (140 km south of Tunis), followed by other cities. The public sector including teaching hospitals remained deprived of this initiative until 1981.

The decentralization of nephrology

Monastir

In 1981, one of the consultant in Charles Nicole Hospital, Dr El May, was appointed head of department of medicine and nephrology at the university hospital "Fattouma Bourguiba" in Monastir. He developed the intensive care and the acute peritoneal dialysis units, but HD was not available in the beginning. At that time our department had just acquired new machines and we lent him two older models which were in store. There was not enough space in the department for the machines, yet they were installed, thanks to the good will of the director of the hospital, by creating a space in the hospital car park. In March 1981, HD service was available to patients. One year later, the hospital acquired two new machines and envisaged an operating budget. In parallel, other renal diagnostics and therapeutic procedures were developed.

Sfax

In 1980, Dr A. Jerraya, an internist and former consultant in our department, was appointed head of department of medicine at the Hédi Chaker university hospital in Sfax. He then developed a nephrology care unit that provided acute peritoneal dialysis treatment but no HD. When the two machines we previously lent to Monastir became available, we lent them again to the department of Dr A. Jerraya in March 1982. This made it possible to start the program of HD at Sfax hospital and provide access to this treatment for patients in the southern part of the country. Shortly thereafter, the nephrology team was expanded and all techniques necessary for diagnosis and treatment were developed. Moreover, Dr J. Hachicha, who succeeded the late Dr A. Jerraya as head of nephrology department, later developed a renal transplantation program.

Sousse

The fourth pole was the new department of nephrology at Sahloul hospital in Sousse, directed by Dr A. Achour. It hosted a chronic HD and CAPD program which started in December 2006 and a kidney transplantation program that started in 2007.

Kidney transplantation

Charles Nicole hospital

With the development of chronic HD in the country, the number of patients requesting kidney transplantation regularly increased. The Charles Nicole team who initially made the preparation and provided the follow-up for patients who received a kidney transplant abroad started to prepare itself for local kidney transplantation. The department of immunology run by Dr K. Ayed had prepared itself by 1985 to meet all the needs of transplantation in Tunisia. Prof. S. Zmerli the head of the urology department at Charles Nicolle hospital also prepared his team for this event.

The first transplant from a live related donor took place in June 1986 by Prof. S. Zmerli and his team, which included Doctors M. El Ouakdi, M. Ayed, M. Chebil and the anaesthetist Dr H. Ben Ayed. The preparation and follow-up were undertaken by the team of Prof. H. Ben Ayed: Doctors A. El Matri, T. Ben Abdallah and C. Kechrid. The first transplant with a cadaveric kidney was carried out by the same team in July 1988.

Law on transplantation and decentralization

The law regulating organ procurement and transplantation was established in March 1991, six years after Tunisia successfully performed the first transplant. This law encouraged the development of kidney transplant programs in other hospitals: the military hospital in 1992, the hospital of Sfax in 1994, the hospital of Monastir in 1995, then the hospital of Sousse in 2007. The National Center for Promotion of Organ Transplantation (CNPTO), created in 1995, played a great part in the development of kidney transplantation in Tunisia.

Research activity

Clinical research developed gradually in parallel with the development of renal care, often in collaboration with foreign partners. This contributed to the active participation in regional and international congresses, and boosted the publication of good quality articles in renowned medical journals. It was strengthened during the last decade by the creation of two research laboratories in Tunis, as well as two research units in Sfax and Monastir.

Nephrology associations

Since 1971, Tunisia took part in the congresses of the European Dialysis and Transplantation Association (EDTA) the precursor of the ERA-EDTA. In 1975, it became the first non European member in this association, well before the arrival of other countries of the south of the Mediterranean area.

In 1982, Prof. Ben Ayed and his colleagues organized, in collaboration with the International Society of Nephrology, the first International Higher Course of Nephrology, which had a North African dimension.

In 1983, the Tunisian Society of Nephrology (TSN) was created under the chairmanship of Prof. H. Ben Ayed. The successive chairmen were Prof. H. Ben Maiz, A. El Matri, A. Kheder and T. Ben Abdallah. It annually organizes three local scientific meetings and a national congress, and contributes to the periodic organization of the Maghrebian congress of nephrology.

Some members of TSN were among the founding members of regional scientific associations, including the African Association of Nephrology (AFRAN), the Arab Society of Nephrology and Renal Transplantation (ASNRT), and the Middle East Society of Transplantation (MESOT), which organized their congresses in Tunisia.

In addition, the Tunisian Association of Patients with Renal Failure (ATIR) was created in 1982 by a group of patients, and its first chairman was the late H. Ben Rejeb, succeeded by R. Hmila. This association played a great part in providing moral and social support to patients.

Conclusion

Nephrology has progressively developed in Tunisia for more than forty five years. Starting from the daring initiative of a man, Prof. H. Ben Ayed, the founding father, it progressed and spread all over the country to meet all the needs of the Tunisian population.

Presently, Tunisia has five departments of nephrology, 132 HD centers and five functioning transplantation centers. Renal transplantation which began in the same year as

other Maghreb countries has evolved without stopping. It had experienced slow periods in its development, but new provisions will make it possible, certainly, to achieve better performance in future years.

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