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Renal Transplantation in Iraq: History, Current status, and Future Perspectives

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ABSTRACT

" Renal transplantation is the best form of renal replacement therapy for patients with end stage renal disease (ESRD). Renal transplantation in Iraq started in 1973 and continued till now as ABO compatible live (related and non-related) donor transplantation. Currently, seven renal transplant units are distributed throughout Iraq. The total number of transplants for 2013 was 500. According to the most recent data, the one year graft (patient) survival was 94.4% (94%). Renal transplantation in Iraq needs more public and governmental awareness. The current change in geopolitics may lead to demographic changes, economy shifts, change in governmental policies and priorities. All these will impose real challenges to the practice of renal allograft donation and transplantation.

Many steps are to be taken to improve the future. The implementation of the proposed transplant registry will add a lot for future planning. The practice of renal transplantation still needs more social, religious, and governmental support."

INTRODUCTION

Renal Transplantation is the best option for treating patients with end stage renal disease (ESRD).[1] The early understanding of kidney disease and the realization that life can be extended in patients with ESRD assigned the kidney to be the pilot organ in the field of transplantation development.[2,3]

Iraq was among the earliest countries to start renal transplantation in the Middle East.[4] The aim of this paper is to shed a light on the history of renal transplantation in Iraq, the current status with its challenges and discuss the prospect of the future.

HISTORY

Emerich Ullmann (Vienna, Austria, 1902) successfully transplanted a dog kidney into the animal neck. The First successful living related donor kidney (mother to son) was in Paris in 1952 by Hamburger. The mother's kidney functioned well without any immune suppressive therapy during 3 weeks until rejection occurred, followed by recipient death. This had inspired Joseph E. Murray, John Merril and their associates at the Peter Bent Brigham Hospital in Boston with their identical monozygotic twin transplantation, which was first attempted two days before Christmas 1954. In 1962 a Successful transplantations of two non-related kidney allografts achieved with total body irradiation, steroids, and 6-Mercaptopurine.[2]

The first cadaver-Heart Beating Donor (HBD) - kidney transplant was in Belgium in 1962.[5] A pivotal milestone in transplantation was the first clinical use of cyclosporine in 1978. This was followed by the sequential discoveries and applications of modern immune suppression with the use of depleting antibodies (1981), introduction of tacrolimus (1989), the use of mycophenolate mofetil (1991) and rapamycin in (1998).[2]

The first renal transplant in the Middle East was in 1967 in Iran.[6] The first kidney transplantation in the Arab world was performed in Jordan in 1972 at King Hussein Medical Centre. The surgeons were Daoud Hanania and Said Karmi; the attending nephrologist was Tarek Suheimat. It is ironic to say that the first successful kidney transplantation in the Arab world had used a kidney from a non–heart-beating deceased donor, yet many countries are still having many challenges in establishing successful deceased donor donation programs. So far Egypt start-

ed transplantation program in 1976 and Saudi Arabia started in 1979. Both approved laws for deceased donation; KSA in 1985 and Egypt in 2010.[7,8]

The first renal transplantation in Iraq was in June 1973 at Al-Rasheed Military Hospital for a civilian patient who had received a kidney from his mother. The surgeons were Dr. Walid Al-Khayal (Figure 1 and 2), Dr. Salim Khatab Omar (Figure 1), Dr. Essam Maki Khamas, and Dr. Kamal Husain. The attending nephrologist was Dr. Ihssan Al-Shamaa (Figure 2). The patient lived for six years after transplantation. This had good echoes on both governmental and popular levels. Before the start of the program, the government and Ministry of Defence sponsored training programmes for doctor Al-Khayal in France and in Hammersmith hospital in London in 1969 and 1970 respectively. He had another seventeen renal transplants until his retirement in 1976. In 1985, the unit was transformed to be Al-Rasheed Renal Transplant Centre. The head of transplant surgeons was Dr. Muneer Al-Ali and the head of transplant physicians was Dr. Ihssan Al-Shamaa. They used to have 30 to 50 renal transplants a year. The work in this centre continued till 2003 although it was hindered by the impact of Iraqi-Iranian war in 1980s and the years of sanctions in 1990s.

On March 1985, the first renal transplant in the Iraqi Ministry of Health had been done in the Medical City Teaching Hospital in Baghdad. The transplant surgeon was Dr. Ussama N. Rifat (Figure 3) and Dr. Sabah Al-Kadhi. The attending physician was Dr. Munther Ahmed Zaki.

At the same year, the Iraqi government contracted with Irish teams to treat Iraqi patients in Ibn Al-Bitar Hospital in Baghdad. In 1987 a transplant team started a live related donor program. The team headed by a New Zealand born

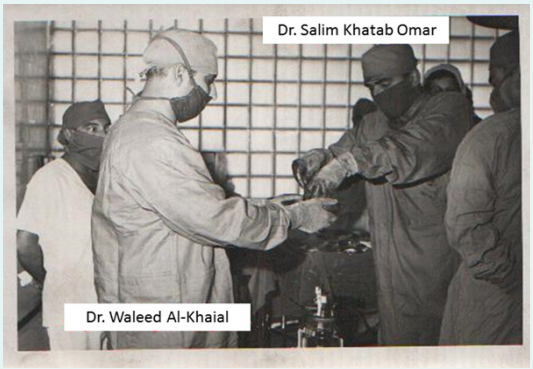

Figure 1: Dr Walid Al-Khayal on the left, and Dr Salim Khatab Omer on the right during the procedure of the first renal transplantation in Iraq at Al-Rasheed Military Hospital in 1973.

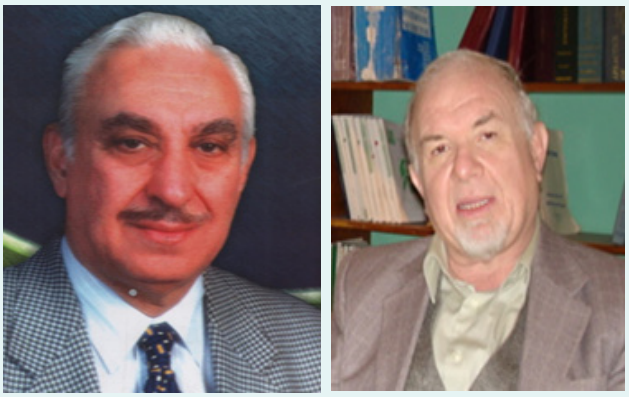

Figure 2: ***On the left*** Dr Walid S Al-Khayal the chief surgeon of the team who did the first renal transplantation in Iraq in 1973. ***On the right***, Dr Ihsan Al-Shamaa the attending nephrologist in the first renal transplantation in Iraq in 1973.

nephrologist, Dr. Peter John Little (1930-2011) (Figure 3). They continued to have once weekly live donor transplant until 1990.[9]

On the other bank of Tigris river (Al-Karkh district), Al-Karrama Hospital had first transplant in 1980 with a transplant team from Al-Rasheed Military Hospital. The transplant surgeons were Dr. Salim Al-Shamaa and Dr. Kamal Hussein. The attending nephrologists were Dr. Khaldoon Al-Janabi and Dr. Hussam Al-Safar. On January 1989, Dr. Shawqi Ghazala (Figure 3) headed the transplant team to what will be Al-Karrama Renal Transplant Centre. They used to have 40-50 transplants per year till his departure to Kurdistan/ Iraq in 2006. However his departure to Kurdistan didnot prevent him from offering support to other areas like training the surgical team who did the first renal transplantation in the city of Basra in 2015.

In 1991, the renal transplantation unit had been established in the surgical specialties hospital in the Medical City Complex. Through the years 261 live related and unrelated renal transplants had been done. In 2009 the Nephrology and renal transplant centre had been officially established.

In 2001, two renal transplants had been performed in Neinava under the supervision of Dr. Shawqi Ghazala and the support of urologist Dr. Suhail Abdul-Rahman. In 2007, the renal transplant centre in the Holly City of Najaf had been established and the first transplant was done in 2009. The transplant surgeon was Dr. Fadhil A. Alwan. In 2015, Al-Basra Nephrology and Renal Transplantation Centre opened under the patronage and support from the Nephrology and Renal Transplantation Centre, the Medical City,

Figure 3: ***On the left***, Dr. Peter J Little (1930-2011) from New Zealand who was the head of the team of renal transplantation at Ibn Al-Bitar Hospital in Baghdad in 1987. ***In the middle***, Dr Ussama N Rifat Chief surgeon who did the first renal transplantation in Medical City in Baghdad in 1985. ***On the right***, Dr Shawqi Ghazalla head of renal transplanted team at Al-Karama Teaching Hospital.

Baghdad. The head of surgical team was Dr. Rafid A Al-Ogaili.

Kurdistan, the northern territory of Iraq started its renal transplantation programme in Erbil in 2001. The transplant surgeon was Dr. Ghazi Zebari who is a US centred Kurdish Iraqi surgeon. He performed renal transplants in Erbil during his occasional visits. Actually the regular programme in Erbil started in 2006 under the supervision of Dr. Shawqi Ghazala as he resided in Kurdistan. Sulaimaniya and Duhok started their programmes in 2008 and 2009 respectively.

The first renal transplanatation in a private hospital was done by Dr Walid Al-Khayal in Al-Khayal Private Hospital in 1976. The renal transplantation had been flourished in Iraq through five private hospitals in 1980s and 1990s. Only two private hospitals in Baghdad offering renal transplantation service now. The exponential increase in renal transplantation in private sector especially during 1980s and 1990s for Iraqi and even non-Iraqi patients had raised deep concerns about ethical issues of paid donation and organ trafficking.[7]

Iraq was one of the first countries in the Middle East to have legislation about organ transplantation through the resolution number 85 in 1986. This was refined by new regulations in 1989. It included items about live and deceased donation, the donor criteria, and altruistic (non-paid) donation. It clearly stated that Iraqis should not donate to non-Iraqi patients.

During these years, all renal transplantation programmes in Iraq were dependent on living donation, related or non-related. Deceased donation was not practiced due to tribal and religious issues.

CURRENT STATUS

Currently, seven renal transplant programmes are running in Iraq with different capacities. The largest is the Nephrology and Renal Transplantation Centre, Medical City in Baghdad. There are five HLA and tissue typing laboratories. Renal transplantation in Iraq is a living donor ABO compatible programme. Five of the programmes accept both related and unrelated donors. The other two, Al-Basrah and Al-Najaf, accepting only related donors for the time being. This issue had been addressed by the establishment of a central committee for accepting donors in Ministry of Health. The committee is a multi-professional team headed by nephrologist and includes psychiatrist, and members from ministries of health and interior. The draft of the new organ transplantation bill had been proposed in 2011, but it is still under consideration in the parliament. In 2014 Ministry of Health in Iraq approved the transplantation management protocols edited by Iraqi nephrologists.

In 2013, five hundred transplant operations were done all over Iraq; both governmental and private hospitals. **Figure 4** shows number of transplant operations in the Nephrology and Renal Transplantation Centre, Medical City from 1990-2014.

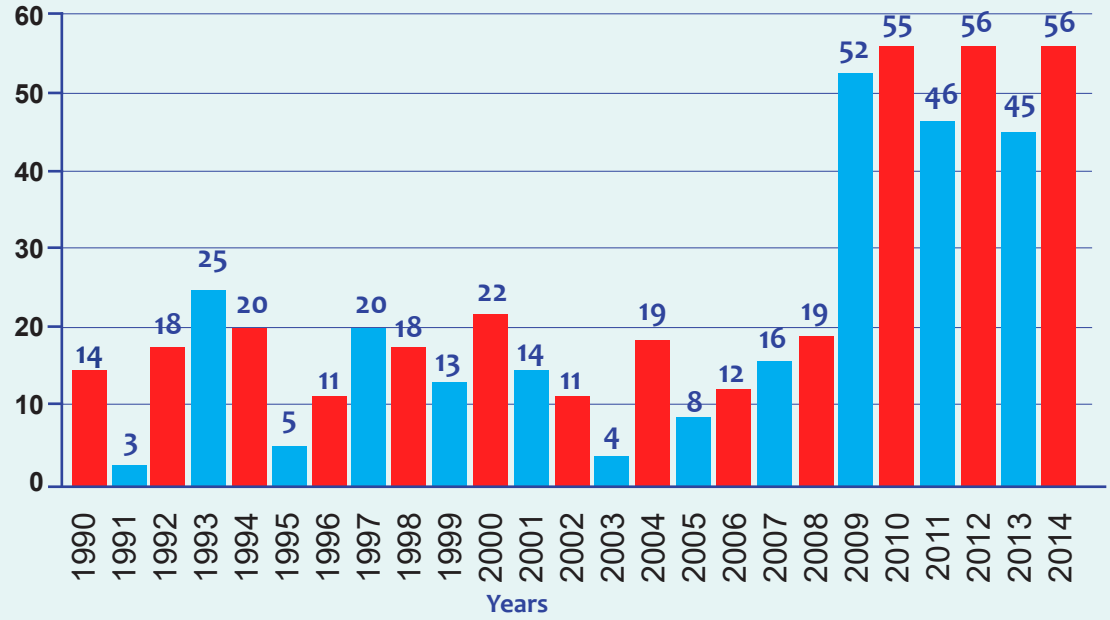

Figure 4: Renal transplantation at the Nephrology and Renal Transplantation Centre, Medical City/ Baghdad from 1990-2014

Iraqi renal transplantation data are still scarce and sparse especially the survival data. The first study was from Al-Rasheed Military Hospital included 182 patients from 1979 to 1999. The 1, 5, and 10 years graft and patient survival were (83.5% and 83.9%), (64.5% and 79.7%), and (61.6% and 71.2%) respectively.[10] Al-Jebory HM et al retrospectively analysed data from governmental and private units for 512 transplants in Baghdad from 1979 to 2005. The one year patient and graft survival was (91% and 89%).[11] One recent single centre study from Erbil/ Kurdistan analysed survival at six month for 88 patients. The patient and graft survival was (90% and 80%).[12]

The most recent data from the Nephrology and Renal Rransplantation Centre in Medical City, Baghdad is a five-year follow up data (2009-2014) showed that one year graft survival was 94.4%. It was 98.9% for lived related donor grafts and 91.8 % for lived unrelated donor grafts. The one year graft survival declined to 82.9% for those who experienced acute rejection episodes. Patient survival at one year was 94%. The three years and five years patient and graft survival was (90% and 91%) and (88% and 87.1%) respectively.[13]

CHALLENGES

There are contradictory points of view about whether there is global ESRD epidemic or not, but it is undisputed that the number of patients seeking renal services in Iraq is really increasing, and this is the first challenge. There are other challanges that should not be overlooked. Uneven health infrastructure leads to inadequate preventive medicine, poor primary health care and screening, late diagnosis of ESRD and late referral to nephrology service. Another critical issue that needs to be addressed well is the poor awareness in the medical community and public at large of the importance of the organ donation and transplantation. Still the governmental support is less than expected by nephrologist and the transplant community. There is no effective health insurance. There is no adequate well trained manpower. Still there are no fully developed renal registries to enable accurate estimates of transplant data.[14]

Health care delivery in Iraq is dominantly governed by public sector. In the view of changing demographics and increasing economic challenges, this may limit the access to health coverage and the health care will be skewed toward more rich communities and more urbanized areas. This will be augmented with the presence of vulnerable populations such as illiterate and impoverished persons, undocumented immigrants, and political or economic refugees. This in turn may increase commercial organ donation in areas where potential donors

can't be protected by specific legislation.[15] In addition, reliable outcome data from both the donors and recipients of private/commercial donation are sparse and fragmentary and likely underestimate the true survival and complication rate.

Kidney donation in Iraq imposed by social and tribal challenges with risk of exploitation of poor by rich or even gender inequalities of using female donors.[13] Transplant nephrologists are facing the challenges with the increasing number of highly sensitized patients, the paucity of agents used for desensitization, and the unavailability of modern tools for the diagnosis of post-transplant complications like viral infections and chronic allograft dysfunction.

FUTURE PERSPECTIVES

The most important action is to increase public and governmental awareness about altruism, donation and the role of transplantation as the best option for the best possible ESRD patient. It's imperative to consider other transplant experience from the surrounding countries like Iran and Saudi Arabia. Deceased donation is a possible option that needs proper setting for organ procurement and a national allocation system. This mandates upgrading of the tissue typing and immunology laboratories to world standards. Laparoscopic donor nephrectomy should be introduced in order to keep pace with the standard practice around the world. Early referral to nephrology services and transplantation is a key element to achieve future goals. All transplant programmes should adopt all steps to ensure donor safety according to the declaration of Istanbul.[15] Transplant physicians should be alert to ensure patient safety through proper selection and the judicious use of the available immunosuppressive medications. They should be vigilant for the management challenges in the long term follow up. This should be conducted through a proper documentation as a base for a proper registry. A proposed registry programme will be initiated soon.

The enthusiasm and energy of the emerging young nephrologists is mandatory to accomplish these hard tasks in different governorates on different clinical and educational levels. It's essential to have a plan and a policy that ensure the continuity of the current programmmes through a consistent provision of immune suppression and care in the view of the current challenging community issues, geopolitics and economy.

In conclusion, renal transplantation in Iraq is the result of work of pioneers that needs to be continued through social, religious and governmental support. Health policy should be aware for the importance of renal transplantation and how to overcome the obstacles, plan for future and to persevere through the wise utilization of finance support and all the possible opportunities.

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