

GRAFT SURVIVAL RATES AFTER KIDNEY TRANSPLANTATION FROM A LIVING RELATED AND CADAVERIC DONOR

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Conflict of interest
The authors declare that they have no conflicts of interest

Keywords
kidney transplantation, graft dysfunction, related donor, kidney cadaver, survival

Abstract

Relevance. Kidney transplantation is one of the most effective and advanced treatments for end-stage kidney disease. Despite the tremendous experience in transplantation, improvement and optimization of postoperative management and immunosuppression protocols, ultimately all this led to an increase the number of people who is in need of a kidney donor and also led to grow the “Waiting list”. Only in February 2021, in the Republic of Kazakhstan, kidney transplantation was necessary for 3114 people, of which 3017 were adults and 97 children [2]. Based on this data, it is already possible to determine the high need for kidney transplantation. The lack of cadaveric organs has over time led to more frequent use of organs from living donors. The aim of this study is to determine the survival of a kidney transplant in recipients from cadaveric and living kidney donors. Based on statistics for 2018, more than 140 thousand kidney transplant operations were performed worldwide, including 95 479 kidney transplants: of which 34 549 (36%) patients were from living donors and 60 718 (64%) patients from cadaveric donor. Kidney transplantation is by far the most common operation in transplantology [3]. The demand for kidney transplantation is increasing by about 2.5-3% every year, and this growth is typical for the whole world.

Тірі туыстық және мәйіттік донордан бүйрек трансплантациясынан кейінгі трансплантаттың өмір сүру деңгейі

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Аңдатпа

Өзектілігі. Бүйрек трансплантациясы-бүйрек ауруының терминалдық сатысын емдеудің ең тиімді және алдыңғы қатарлы әдістерінің бірі. Трансплантацияны жүргізудің, операциядан кейінгі жүргізу мен иммуносупрессия хаттамаларын жетілдіру мен оңтайландырудың орасан зор тәжірибесіне қарамастан, сайып келгенде осының барлығы донорлық бүйрекке мұқтаждар санының өсуіне және «күту парағының» өсуіне алып келді. Тек 2021 жылдың ақпан айында Қазақстан Республикасында бүйрек трансплантациясын 3114 адам жүргізу қажет болды, оның ішінде 3017 ересек адам және 97 бала [2]. Осы мәліметтерге сүйене отырып, бүйрек трансплантациясының жоғары қажеттілігін анықтауға болады. Уақыт өте келе мәйіттің ағзаларының жетіспеушілігі ағзаларды жиі қолдануға әкелді тірі донорлардан алынған. Осы зерттеудің мақсаты - мәйіттік және тірі бүйрек донорларынан реципиенттерде бүйрек трансплантатының өмір сүруін анықтау болып табылады. 2018 жылғы статистикаға сүйенсек, бүкіл әлемде бүйрек трансплантациясы бойынша 140 мыңнан астам операция жасалды, оның ішінде 95 479 бүйрек трансплантациясы: оның ішінде 34 549 (36%) пациент тірі донорлардан және 60 718 (64%) пациент кадавер донорынан болды. Бүйрек трансплантациясы-бүгінгі таңда трансплантологиядағы ең көп таралған операция [3]. Жыл сайын бүйрек трансплантациясына деген қажеттілік шамамен 2,5-3% - ға артады және бұл өсу бүкіл әлемге тән.

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**Выживаемость трансплантата после трансплантации почки от
живого родственного и кадаверного донора**

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Аннотация

Актуальность. Трансплантация почки - одно из наиболее эффективных и передовых методов лечения терминальной стадии заболевания почек. Несмотря на колоссальный опыт проведения трансплантации, усовершенствования и оптимизации послеоперационного ведения и протоколов иммуносупрессии, в конечном счете все это привело к тому, что возросло количество нуждающихся в донорской почке и растет «Лист ожидания». Только за февраль 2021 года, в Республике Казахстане трансплантацию почки необходимо было провести 3114 человек, из которых 3017 взрослых и 97 детей [2]. Исходя из этих данных, уже можно определить высокую потребность в пересадке почек. Нехватка трупных органов со временем привела к более частому использованию органов взятых с живых доноров. Целью данного исследования - является определение выживаемости трансплантата почки у реципиентов струпных и живых доноров почки. Исходя из статистики за 2018 год во всем мире было выполнено более 140 тысяч операций по трансплантации почек, в том числе 95 479 трансплантаций почек: из них 34 549 (36%) пациентов составило от живых доноров и 60 718 (64%) пациентов от трупного донора. Трансплантация почки - на сегодняшний день самая распространенная операция в трансплантологии [3]. Ежегодно потребность в трансплантации почек увеличивается примерно на 2,5-3%, и этот рост характерен для всего мира.

Конфликт интересов
Авторы заявляют об отсутствии
конфликта интересов

Ключевые слова
Трансплантация почки,
дисфункция трансплантата,
родственный донор, кадавер
почки, выживаемость

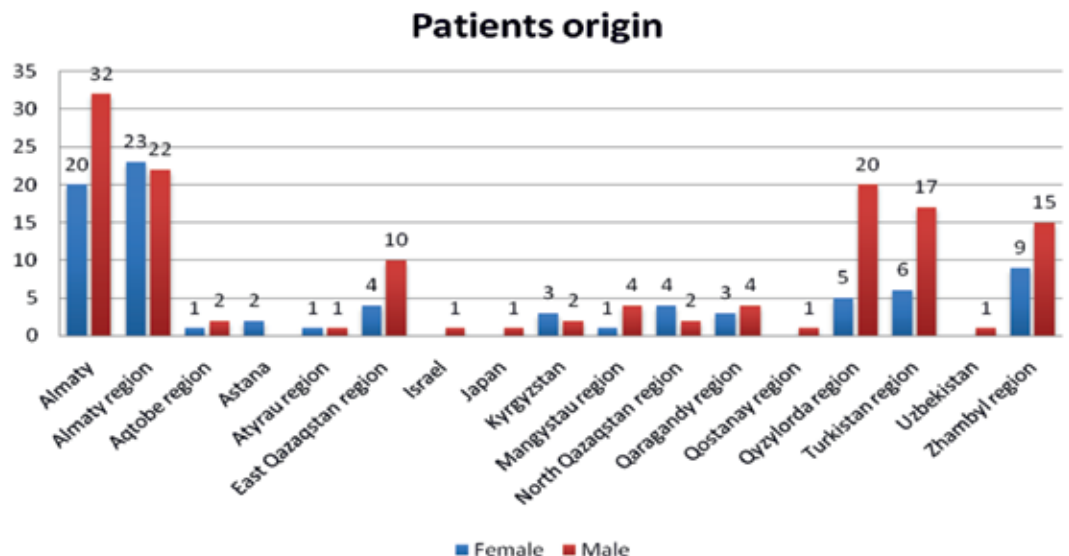
Materials and methods

To collect initial information about patients, the hospitalization database Medical Information System (MIS) and archival documents of a medical institution of JSC “National Scientific Center of Surgery named after A.N. Syzganov” were used. A list of patients was compiled and analysis of clinical, laboratory, and instrumental data was carried out, and 217 study patients were selected, the frequency of complications and data on the survival of recipients after transplantation were analyzed.

Results

A total of 217 kidney transplants performed at the Syzganov National Research Center of Surgery from 2012 to 2018 were retrospectively analyzed. Induction was performed by Simulect and immunosuppression was performed by Tac / MMF / GKS. 217 transplants from a related donor, altruistic donors, and deceased kidney donors. 2012 - 22 patients, 2013 - 21 patients, 2014 - 28 patients, 2015 - 30 patients, 2016 - 61 patients, 2017 - 40 patients, 2018 - 15 patients. Of the 217

Figure 1.
Patients origin



recipients, 155 are men and 62 are women. Of the 212 recipients, 209 patients are residents of the Republic of Kazakhstan, the remaining 8 patients are not residents of the country. The average age of patients in 2012: men - 37 years old, women - 36 years old; 2013: men - 36 years old, women

- 34 years old; 2014: men - 38 years old, women - 41 years old; for 2015: men - 40 years old, women - 38 years old; 2016: men - 36 years old, women - 35 years old; for 2017: men - 33 years old, women - 35 years old; for 2018: men - 40 years old, women - 36 years old.

Fatal outcomes vs Successful outcome

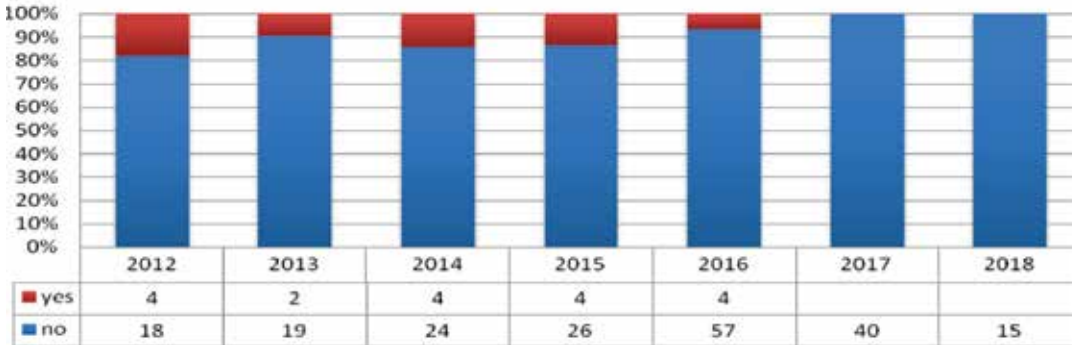


Figure 2. Mortal outcome vs Successful outcome

Loss of graft duration

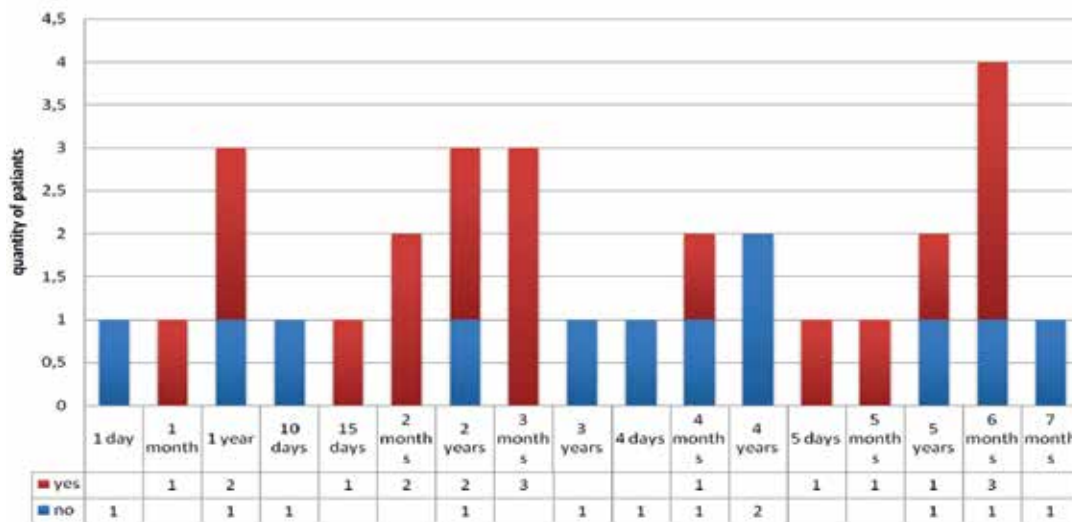


Figure 3. Loss graft

Donors



Figure 4. Donors

Figure 5.
Initial disease

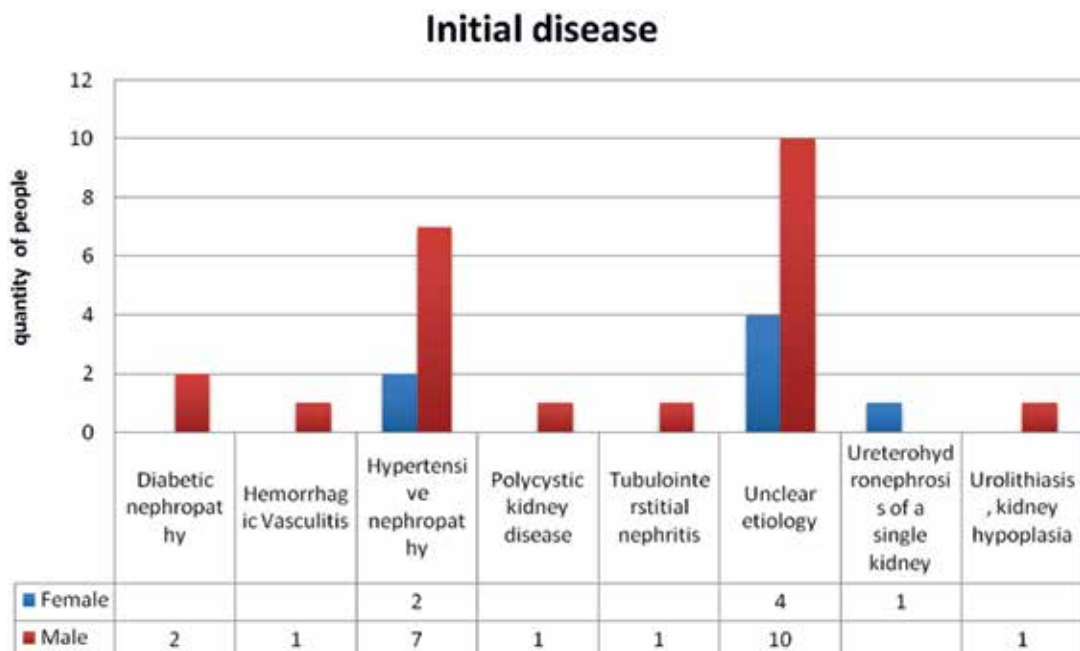
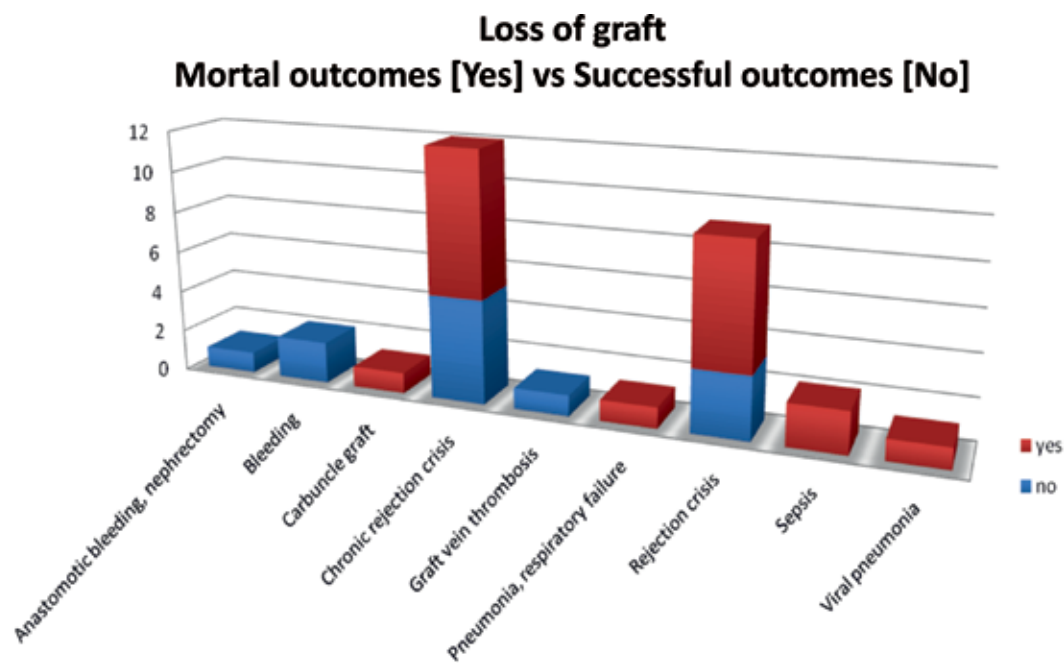


Figure 6.
Loss of graft (Mortal outcomes [Yes] vs Successful outcomes [No])



In 217 operated patients, a favorable outcome was observed in 187 recipients, and in 30 patients graft rejection occurred. Out of 30 transplant rejections: 18 with rejection followed by death, 12 with loss of the graft which led to maintenance hemodialysis. The reasons for the loss of the graft were: anastomotic bleeding, thrombosis of the graft veins, acute and chronic graft rejection. At the same time, a crisis of rejection was more often observed in recipients from a cadaveric donor. The time of the onset of graft dysfunction and rejection crisis varied depending on: previous illness, chronic disease, transplantation followed by transplantectomy. kidneys in foreign countries: China, Pakistan, Be-

larus. The cause of 18 deaths were: sepsis, graft carbuncle, chronic rejection crisis, pneumonia with respiratory failure.

The initial disease that caused the development of the terminal stage of CRF stage 5 in 30 patients: diabetic nephropathy, hemorrhagic vasculitis, hypertensive nephropathy, polycystic kidney disease, tubulointerstitial nephropathy, ureterohydronephrosis of a single kidney, urolithiasis with renal hypoplasia, and diseases of unclear etiology.

Conclusions

9-year kidney transplant survival rate in 2012 was 80 %. The survival rate of a graft from a living related

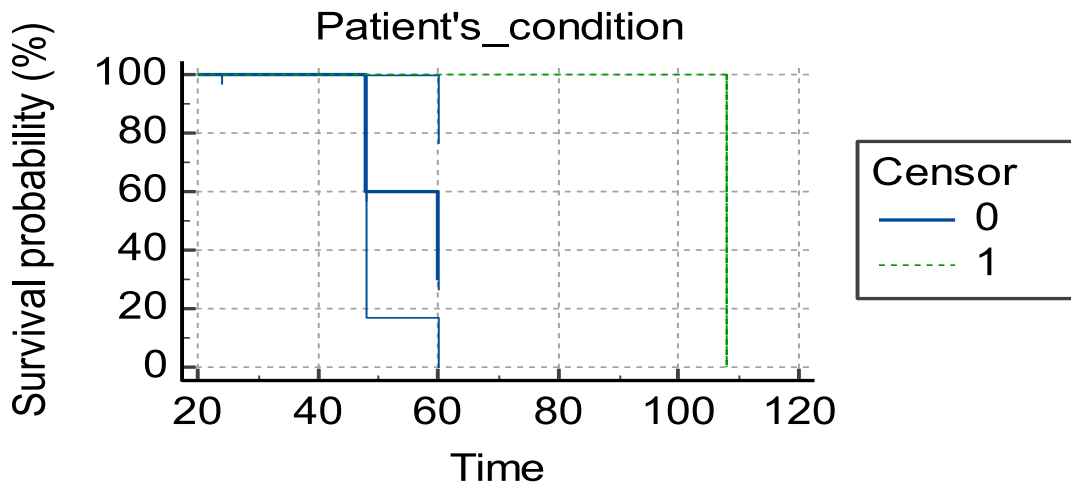


Figure 7.
Patient's condition

Number at risk

Group: 0

6 5 0 0 0 0

Group: 1

16 16 16 16 16 0

donor and a cadaver kidney at the initial stages is identical but on average from a living related donor 15-20 years, and for a cadaver kidney 5-7 years, however, these figures can vary depending on the time of cold ischemia, histocompatibility parameters, age the recipient and depends on the ongoing immunosuppressive therapy. The highest long-term graft survival is observed when the donor and recipient are completely

identical in HLA and the survival rate is 25 years or more, and with identical only one HLA haplotype, it is 10-15 years, however, in the cadaver kidney, the most important is the correspondence of histocompatibility and the time of cold ischemia of the kidney. These indicators are directly proportional to predictors of long-term graft loss, what confirms the previous works. [4] [5] [6] [7] [8] [9] [10].

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