Lymphocele after renal transplantation – a single center experience

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Abstract

Introduction and objectives. Kidney transplantation improves survival and quality of life for the recipients and although not a direct concern of the patient it is the most cost-effective treatment for end-stage renal disease compared to chronic dialysis. Lymphocele is one of the most common complications in kidney transplant recipients and may affect as many as 26% of them.

Materials and methods. We evaluated retrospectively the occurrence of lymphocele in a series of 1542 consecutive kidney transplants performed in our center between 1st of July 1997 and 31st of December 2014. Lymphocele were diagnosed by ultrasonography and computed tomography.

Results. The incidence of lymphoceles after kidney transplantation in our center was 1.23% (19 cases). The indication for treatment ware local symptoms, graft dysfunction or both. In eight cases percutaneous drainage guided by ultrasonography and sclerotherapy with povidone-iodine was an efficient therapy. In 11 cases open surgery was the therapy of choice and consisted in large fenestration into the peritoneal cavity in six cases or associated with ureterocystoneostomy in five cases.

Conclusions. Lymphoceles after kidney transplantation can be treated by ultrasound-guided drainage associated with sclerotherapy with the inconvenience of a longer hospital stay and a recurrence rate up to 40%, or by open or laparoscopic surgical intervention with large fenestration into the peritoneal cavity, associated or not with ureterocystoneostomy. Taking into account that we did not notice any recurrence or complication after open surgery, we consider that open fenestration into the peritoneal cavity is the method of choice for the treatment of lymphoceles after renal transplantation.

Keywords: lymphocele, renal transplantation

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Introduction and objectives

Kidney transplantation improves survival and quality of life for the recipients and in health care system it is the most cost-effective treatment of end stage renal disease compared to chronic dialysis[1]. Lymphocele is one of the most common complication in kidney transplant recipients and can occur in 1% to 26% kidney transplant recipients[2,3,4]. Lymph is a result of extravasation from capillary vessels of blood plasma[5,6]. Lymphoceles are pseudo cystic collections with lymph content[5]. They can appear after any surgery involving the lymphatic system[7]. In kidney transplantation, transection of lymphatic vessels surrounding external and internal iliac vessels and liquid collections around renal allograft in a non-epithelialized cavity represents the cause of lymphocele formation[7,8,910,11]. Usually, lymphoceles are asymptomatic and incidentally diagnosed by routine ultrasonography[12]. Many of those perirenal collections resolve spontaneously. However, symptomatic lymphoceles require treatment because they may affect transplant function by mass effect directly to the kidney, or by direct compression of the ureter, bladder, iliac or renal vessels[13]. Furthermore, some lymphocele may infect and lead to infectious complications in addition to obstruction ones. There are some predisposing factors for lymphocele formation such as high dose corticosteroids, use of rapamycin inhibitors and delayed graft function, acute rejection[14,15,16,17].

The aim of this study was to evaluate the incidence of lymphocele after renal transplantation in our center.

Materials and methods

We evaluated retrospectively the occurrence of lymphocele in a series of 1542 consecutive kidney transplants performed in our center between 1st of July 1997 and 31st of December 2014. In this period, we performed 1035 kidney transplants from living-related donors (67.12%) and 507 transplants from cadaveric donors (32.88%). Ureteroneocystostomy was performed after kidney revascularization using Leadbetter-Politano (L-P) transvesical technique in 1004 cases (65%) and Lich-Gregoir (L-G) extravesical technique in 538 cases (35%). Drainage catheter of the bladder was usually kept for 6 to 8 days after surgery. Ureteral stent (Cook Medical 6 to 8 Fr) was used only in selected cases (19%) and kept in place usually two to six weeks period.

Medical data of patients who underwent treatment for lymphocele after kidney transplantation were collected from our center database and included donor and recipient type, age, and gender, type of ureteroneocystostomy and the use of stent (table 1).

Table 1. Clinical characteristics of study group

Variables	n
Donor Type (living/cadaveric)	1035/507
Donor age (average)	48.4±16.6 y. o.
Donor gender (m/f)	1.16/1
Receptor age (average)	36.4±9.7 y. o.
Recipient gender (m/f)	1.51/1
Recipient adult/child	1474/68
Ureteroneocystostomy (L-P/L-G)	1004/538
Bladder catheter	6-8 d
Use of stent	19%

Lymphocele were diagnosed by ultrasonography (Fig. 1 and 2) and computed tomography (Fig. 3 and 4).



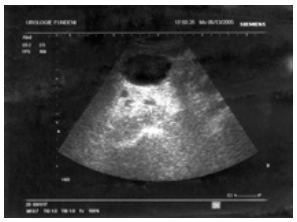
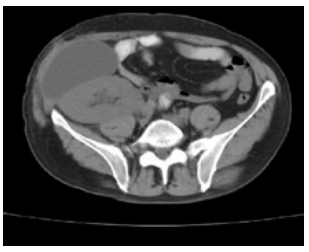


Fig. 1 and 2. Ultrasound images with perinephric lymphoceles.

Although ultrasound investigation is very sensitive in the detection of fluid collections, the appearance is nonspecific (seromas, urinomas, lymphoceles, abcesses). Clinical findings with laboratory and combined imaging modalities may suggest a possible fluid collection aetiology.



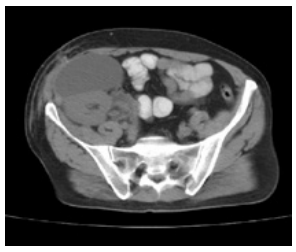


Fig. 3 and 4. Axial CT images showing peri-graft lymphoceles.

Percutaneous drainage ± sclerotherapy or open surgery were performed for the treatment of lymphocele.

Statistical Analyses:

Normally distributed variables are expressed as mean ± standard deviation. Nonparametric variables are described as median (lower quartile and upper quartile). Analyse-it (Analyse-it Software, Ltd., Leeds, UK) and SPSS (SPSS Inc., Chicago, IL, USA) software were used to analyze the data.

Results

The incidence of lymphoceles after kidney transplantation in our center was 1.23% (19 cases). The indication for treatment were local symptoms, graft dysfunction or both.

Statistical analysis showed no statistical differences for donor type and gender, recipient gender, cold and warm ischemia time, number of graft vessels and lymphocele incidence. There are no correlations between ureteoneocystostomy type (Leadbetter-Politano or Lich-Gregoir), stent use and this complication.

In our series median duration between kidney transplantation and lymphocele development was 59 days (range 29 - 1345 days).

Tab. 2. Characteristics of lymphocele group

Variables	Lymphoceles
Donor Type (living/cadaveric)	13/6
Donor gender (male/female)	12/7
Recipient gender (m/f)	13/6
Graft vessels (single/ multiple)	18/1
Cold ischemia time (min)	151.4
Warm ischemia time (min)	27.3
Creatinine at diagnosis	2.5 (1.3- 5.2)
Ureteroneocystostomy (L-P/L-G)	13/6
Stent use (y/n)	4/15
Interval from transplantation (days)	59 (29- 1345)

For the 19 cases of lymphoceles we performed a total of 24 procedures.

In 13 cases (54.2%) percutaneous drainage guided by ultrasonography and sclerotherapy with povidone-iodine was performed, but only in eight cases (61.5%) it was an efficient therapy. In 5 cases (38.5%) we observed recurrence after percutaneous drainage.

In six cases, lymphocele position was not suitable for percutaneous drainage. For all these cases (difficult position or recurrence), open surgery was performed and consisted in large fenestration into the peritoneal cavity in six cases (25%) or associated with ureterocystoneostomy in five cases (20.8%). Neither a complication nor a recurrence was observed after open surgery.

Tab. 3. Lymphocele treatment procedures

Procedure	Number
Percutaneous drainage + sclerotherapy - efficient - recurrence	13 (54.2%) 8 (61.5%) 5 (38.5%)
Open surgery procedures - primary decision - after percutaneous drainage recurrence	11 (45.8%) 6 (25%) 5 (20.8%)
Type of open procedures - fenestration - fenestration + uretero-cystoneostomy	11 (45.8%) 6 (25%) 5 (20.8%)
Recurrence after open surgery	0

Duration of hospital stay after percutaneous drainage was between 7 to 43 days with a median of 15 days. After open surgery procedures, duration of hospital stay was between 5 to 10 days with a median of 7 days.

Discussions

Small and asymptomatic lymphoceles usually resolve spontaneously without treatment[12]. Large lymphoceles usually become symptomatic by compressing renal graft and adjacent structure due to localisation, such as ureter, urinary bladder, iliac vessels, causing various symptoms (abdominal or pelvic pain, abdominal distension, constipations, graft obstruction with hydronephrosys, genital and ipsilateral pelvic oedema, vascular iliac and graft thrombosis)[13,18,19]. Ureteral and vascular obstructions are associated with decreased urine output and increasing serum creatinine levels[13].

Diagnosis is usually performed by a sequence of imaging investigations (ultrasound followed by computed tomography or MRI) combined with clinical findings and laboratory values (serum creatinine, biochemical analyses of the fluid aspirated).

Many studies have reported a series of risk factors for the development of lymphoceles, such as, high dose corticosteroids, use of rapamycin inhibitors, delayed graft function, acute rejection, retransplantation, deceased donor transplantation, diabetes mellitus[14,15,16,17].

In our study, recurrence rate after percutaneous drainage with sclerotherapy as high as 38.5%. For all these cases, open or laparoscopic surgery procedures

must be performed. We did not notice any complication or recurrence after open surgery performed for lymphocele treatment after renal transplantation. Furthermore, we notice a considerable shorter hospital stay after open surgery compared to percutaneous procedures.

For the cases associating ureteral stenosis due to lymphocele formation, ureterocystoneostomy must be performed in order to ensure an adequate renal graft function.

Conclusions

In our experience, lymphoceles after kidney transplantation can be treated by ultrasound-guided drainage associated with sclerotherapy with the inconvenience of a longer hospital stay and a recurrence rate of almost 40%, or by open or laparoscopic surgical intervention with large fenestration into the peritoneal cavity, associated or not with ureterocystoneostomy. Taking into account that we did not notice any recurrence or complication after open surgery, we consider that open fenestration into the peritoneal cavity is the method of choice for the treatment of lymphoceles after renal transplantation.

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