

Physiological Problems Which Confront Renal Transplant Recipients

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ABSTRACT:

BACKGROUND:

The study objectives are to identify the problems which confront renal transplant recipients (RTR_S).

OBJECTIVE:

Identify the physiological problems which confront renal transplant recipients (RTR_S).

METHODS:

A descriptive study was carried out at two Teaching Hospitals with kidney transplant centers. Surgical specialties and Al-Karama outpatients' clinics for (RTR_S), and three Teaching Hospitals; Medical city, Al-Karama and Al-Yermok which were responsible for immunosuppressive drugs distribution .Starting from October ,1st 2006 to the end of July 2007.To achieve the objectives of study, a non-probability (purposive) sample of 150 (RTR_S) who were attending to the outpatient clinic of the above listed hospital were selected according to the criteria of the study sample .

The finalized questionnaire contained (42) items. The content validity of the instrument was established through penal of (14) experts. Reliability of the problems scales was determined by test-retest method which was estimated as average ($r=0.76$).

Data was gathered by interview technique using the questionnaire format and data was analyzed by application of descriptive and inferential statistical methods.

RESULT:

The results of the study indicated that the (RTR_S) confront (83) problems and affected by these problems with different severity level, high, moderate, and low.

CONCLUSION:

according to the results of this study, the researcher recommended that the provision of the necessary post transplant medicines should be easily acquired from easy to reach centers.

KEY WORDS: end stage renal failure, hemodialysis, peritoneal, cadaver, immunosuppressant.

INTRODUCTION:

End Stage Renal Failure (ESRD) is the final outcome of many diseases which may attack this important organ which plays a role in various metabolic and physiological processes .⁽¹⁾excretion of waste products of metabolism ,the control of salt and water balance and blood pressure (BP) ,and the regulation of bone metabolism and hemoglobin production. if kidney function is impaired all these body systems are affected. The patient with ESRD is offered two medical options, the first is dialysis (either peritoneal or hemodialysis) the second is kidney transplantation. Although the first is medically easier but it requires lifelong and frequent inpatient procedures and hampers his freedom and affects his work and

quality of life. The second is a tissue and blood matched donor, the donor may be living (related or non related to the recipient) or a cadaver.

The recipient will also need a continuous course of immunosuppressant, a continuous sticking to medical advices regarding medications, diet and follow up etc... In spite of all these requirements, kidney transplants offer a chance of a possible lifelong survival free from hospital ties and thus grant the patient a better quality of life and a better coping with work and income and frees his family from much caring. ⁽²⁾

However a patient with a renal transplant is in continuous need for potent medications to stop rejection by suppressing his immune responses. These medications have their own shortcomings .First of which are their availability, second is their cost, third is the need to know everything about their side effects ,how to prevent and treat them. Given the fact that the second transplant may be more difficult than the first one post procedural and

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donor points of view, it will be clear that a strict adherence to a comprehensive follow up is highly required. ⁽²⁾ The nurse who is in a more direct contact with patients and being part in the team of patient care ⁽³⁾. Finds herself in an excellent position to survey, assess and detect early signs and symptoms of expected post transplant complications so that early and expert interventions can be applied to prolong the graft life and consequently enhance the patient's life pattern. The nurse will also be able to detect psychological problems related to the new iatrogenic circumstances imposed on the patient by the transplantation. All over the world the nurse working in medical and surgical centers is seen by patients as a first hand personnel both before and after the operation. She is found to be an easier to access professional than most doctors who are always busy somewhere else and may have much less time to spare for frequent consultations and visits by patients. Her kindness and expertise together with her easy accessibility by patients gives her a unique role in assessing all aspects of patients needs, detecting early consequences of the transplanted kidney as an operation, side effects of the prescribed medications ,advising on the need for early interventions, the need for referring patients to their doctors and counseling both patients and their relatives on a multitude of matters related to nutrition, social life, work, leisure activities and the development of depression only to mention a few points of her role. The nurse will be of a great help to doctors by minimizing their time spent on unnecessary attendances of patients she will be helping patients guard their transplanted kidneys which are too difficult to replace in cases of post operative failure.

MATERIALS AND METHODS:

Design: An exploratory descriptive design was conducted on the outpatients clinics' renal transplant recipients (RTR's) starting from October 1st 2006 to the end of July 2007 in order to identify the problems which confront renal transplant recipients.

A descriptive study was carried out at two Teaching Hospitals with kidney transplant centers. Surgical specialties and Al-Karama outpatients' clinics for (RTRs),and three Teaching Hospitals; Medical city Al-Karama and Al-Yermok which were responsible for immunosuppressive drugs distribution .

The sample of the study:

A non-probability (quota) sample, which was consisted of all kidney transplantation recipients, who were attending the kidney transplantation outpatient's clinics. The sample was selected according to following criteria:

1. Irreversible kidney failure treated by renal transplantation for at least six months.
2. Adult recipients 18-60 years of age.
3. On most common immunosuppressant drugs was used to prevent rejection, corticosteroid, Azathioprine (Imuran), calcineurin inhibitor (cyclosporine A and tacrolimus) Mycophenolate mofetil (cellcept). The sample comprised (150) subjects who received kidney transplantation and attended the outpatient clinics.

Statistical analysis:

The researcher used the appropriate statistical means in the data analysis which include the following

1. Descriptive data analysis: this approach was performed through the determination of:
 - a. Frequencies (f)
 - b. Percentage (%)
2. Inferential data analysis: this approach performed through the determination of. a. Mean of score, Chi-Square (χ^2) test, and c. Pearson correlation coefficient.

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RESULTS:

Table 1 :Demographic characteristics of (150) renal transplant recipients

No.	Variables	F.	%	Cumulative%
1	Age (years)	F.	%	Cumulative%
1.1	Less than 20	5	3.3	3.3
1.2	20 – 29	27	18	21.3
1.3	30 -39	45	30	51.3
1.4	40 – 49	45	30	81.3
1.5	50 – 59	20	13.4	94.7
1.6	60	8	5.3	100
	Total	150	100	
2.	Gender	F.	%	Cumulative%
2.1	Male	104	69.3	69.3
2.2	Female	46	30.7	100
	Total	150	100	
3.	Marital status	F.	%	Cumulative%
3.1	Single	39	26	26
3.2	Married	103	68.7	94.7
3.3	Widowed	0	0	94.7
3.4	Divorced	7	4.6	99.3
3.5	Separated	1	0.7	100
	Total	150	100	
4.	Level of education	F.	%	Cumulative%
4.1	Illiterate	9	6	6
4.2	Read & Write	11	7.3	13.3
4.3	Primary	19	12.7	26
4.4	Intermediate	38	25.33	51.33
4.5	Secondary	23	15.33	66.7
4.6	College	24	16	82.7
4.7	Other	26	17.3	100
	Total	150	100	
5.	Occupation	F.	%	Cumulative%
5.1	Student	4	2.7	2.7
5.2	Employee	32	21.3	24
5.3	Retired	26	17.3	41.3
5.4	Housewife	30	20	61.3
5.5	Other	58	38.7	100
	Total	150	100	
6.	Change job after transplantation	F.	%	Cumulative%
6.1	Yes	73	48.7	48.7
6.2	No	77	51.3	100
	Total	150	100	
7.	Income	F.	%	Cumulative%
7.1	Sufficient	1	0.7	0.7
7.2	Insufficient	149	99.3	100
	Total	150	100	
8.	There is Health center in the place of your residence for follow-up and receiving drugs	F.	%	Cumulative%
8.1	Yes	117	78	78
8.2	No	33	22	100
	Total	150	100	

+ Mean age 41.5 years

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The demographic characteristics of (150) renal transplant recipients indicated that the similar percentage of them (30 %) was accounted for those who were (30 – 39) and (40 – 49) years old ,and (69.3 %) were males . Most of them (68.8 %)were married, (25.3 %) were intermediate

school graduates , (38.7 %) of them had others jobs , (51.3 %) of them had no job change after renal transplantation , (99.3 %)of them had insufficient income , while (78 %) had health center in the place of their residence for follow-up which presented them with immunosuppressive drugs .

Table 2 :A descriptive statistical for the items of the (physical dimension)

No.	Neurological system items	always	sometime	never	M.S.	Severity
1.	Less physical activities	52	72	26	2.17	M
2.	Confusion	20	49	81	1.59	M
3.	Loss of sensation in extremities	38	62	50	1.92	M
4.	Muscles twitching	33	69	48	1.90	M
5.	Tremor	62	45	43	2.13	M
No.	Gastrointestinal system items	always	sometime	never	M.S.	Severity
1.	Gum hyperplasia	39	18	93	1.64	M
2.	Abdominal pain	8	52	90	1.45	L
3.	Heart burn	30	54	66	1.76	M
4.	Mouth ulceration	22	69	59	1.75	M
5.	Anorexia	3	33	114	1.26	L
6.	Diarrhea	7	74	69	1.59	M
7.	Ulceration and bleeding of GIT	3	6	141	1.08	L
8.	Increased body weight	66	42	42	2.16	M
9.	Increased appetite	75	40	35	2.27	M
No.	Musculoskeletal system items	always	sometime	never	M.S.	Severity
1.	Backache, Bone pain and joint	62	60	28	2.23	M
2.	Easy bone fracture	5	7	138	1.11	L
3.	Myopathy	43	56	51	1.95	M
No.	Endocrine system items	always	sometime	never	M.S.	Severity
1.	Moon face ,increase obesity behind the neck , abdominal and shoulder	39	48	63	1.84	M
2.	Hyperglycemia	33	48	69	1.76	M
No.	Cardiovascular system items	always	sometime	never	M.S.	Severity
1.	Palpitation	21	90	39	1.88	M
2.	Increased in blood pressure	57	57	36	2.14	M
3.	Dyspnea	9	48	93	1.44	L
4.	central chest pain radiated to the neck ,shoulder , and upper arms	15	45	90	1.50	M
No.	Respiratory system items	always	sometime	never	M.S.	Severity
1.	Infection of tonsil and pharynx	9	51	90	1.46	L
2.	Chest infection	3	45	102	1.34	L
No.	Hematology items	always	sometime	never	M.S.	Severity
1.	Fatigue	69	12	69	2.00	M
2.	Anemia	8	46	96	1.41	L
3.	Easy bruising at easy trauma	24	44	82	1.61	M
4.	Congestion of face	58	47	45	2.09	M
5.	Susceptibility to a acquire infection	40	79	31	2.06	M
No.	Genitourinary system items	always	sometime	never	M.S.	Severity
1.	Decreased sexual function	28	21	101	1.51	M
2.	Decreased ability to procreate	49	33	68	1.87	M
3.	Urinary tract infection	34	40	76	1.72	M
No.	Dermatology system items	always	sometime	never	M.S.	Severity
1.	Decreased wound healing	33	18	99	1.56	M

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2.	Acne	51	19	80	1.81	M
3.	Alopecia	21	30	99	1.48	L
4.	Flush face	66	34	50	2.11	M
5.	Change in hair texture	60	12	78	1.88	M
6.	Skin tumor	45	14	91	1.69	M
7.	Presence of hair in unpleasant body part	113	10	27	2.57	H
No.	Ocular items	always	sometime	never	M.S.	Severity
1.	Blurred vision	70	36	44	2.17	M
2.	Orbit pain	10	38	102	1.39	L

This table shows that the mean of scores are high on item (7) (Dermatology system) ,and moderate on items 1,2,3,4,5,(neurological system), items 1,3,4,5,8 and 9 (gastrointestinal system) items 1,3(musculoskeletal system) . items 1,2 (endocrine system) items 1,2,3 (circulatory system) items 1,3,4 and 5 (hematology) items 1,2 and 3 (genitourinary system) 1,2,4,5 and 6 (Dermatology system) item 1 (ocular) , and low for the remaining system items.

DISCUSSION:

Regarding the physical problems of renal transplant recipients (RTR_S) (Table 2) shows that the problems which is related to the neurological system (item 1-5) indicates that the renal transplant recipients got moderate severity mean of mean of scores .These problems were side effect of cyclosporine A.⁽⁴⁾ In relation to the gastrointestinal system (item 1, 3, 4, 6, 8, 9) indicates that the (RTR_S) got moderate severity mean of mean of score.

The immunosuppressive drugs can alter one's metabolism; however, more often, we find patients are feeling better and therefore eating more. These are a period of time when patients need to adjust to changes going on in their body.⁽⁵⁾

The effect of immunosuppression on gastrointestinal tract are multiple and include loss of gastric activity ,impaired immune response ,reduced mucosal integrity ,and compromised mucosal regeneration. Mouth ulceration was a common problem occurs as results of immunosuppressive drugs.⁽⁶⁾

Concerning musculoskeletal system (items 1, 3) indicate that the (RTR_S) got moderate severity mean of mean of score .

The vitamin D metabolism remains disturbed for a considerable time after transplantation. In nearly half of the patients, the levels of active vitamin D remain abnormal for at least 6 months. The BMD decreased during the first 6 months after transplantation and remained stable there after .We speculate that the observed abnormalities in

vitamin D metabolism may contribute to early bone loss after renal transplantation.⁽⁷⁾

The metabolic bone disease associated with chronic kidney disease often improves after successful kidney transplantation .However, hyperparathyroidism may persist.⁽⁸⁾

Bone loss, a significant complication in kidney transplant recipients, is attributable mostly to corticosteroid use and to persistent hyperparathyroidism corticosteroid-induced osteoporosis occurs soon after initiation of the therapy and contributes to both bone pain and fractures.

Regarding endocrine system (items 1-2) indicates that RTR_S got moderate severity mean of mean of score.⁽⁹⁾

The drugs given to keep the transplant working the anti-rejection drugs can cause diabetes as aside effect. Prednisolone (a steroid), cyclosporine and tacrolimus can all cause diabetes. Regarding cardiovascular system problems of RTR_S (items 1, 2, 4) indicates that the RTR_S got moderate severity mean of mean of scores.⁽¹⁰⁾

The immunosuppression based upon calcineurin inhibitors, such as cyclosporine (sandimmune. Neoral, Gengrat, ect) or tacrolimus (Prograf), itself produces widespeared vasoconstriction and hypertension, particularly when combined with steroids.⁽¹¹⁾

As a result of mineralocorticoid effect of corticosteroids can lead to retention of sodium and water which may lead to congestive heart failure, expansion of blood vessels, edema, and hyperkalemia may be seen in Cushing syndrome.⁽¹²⁾

The ability of corticosteroids to aid circulating vasopressor substance in keeping the blood pressure elevated. In addition hypertension may be caused by increase sensitivity of arterioles to circulating catecholamine which stimulate increase heart rate and the force of contraction and cause vasoconstriction that lead to hypertension.⁽¹³⁾

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Cardiovascular disease are major complications of immunosuppressive therapy and are the main causes of death after transplantation however, renal transplantation at any age offers a survival advantage when compared with dialysis. Transplant centers try to minimize the long-term toxicity of antirejection drugs by optimizing blood pressures control, normalizing lipid level and screening for cancer and infection.⁽¹⁴⁾

In relation to hematology (1, 3-5 items) indicated that the RTR_S got moderate severity mean of mean of score. The erythrocytosis is another occurrence after renal transplantation.⁽¹⁵⁾

Anemia is a common complication for transplant recipient. Many patients leave the dialysis population with diminished iron stores and are unable to respond to erythropoietin produced by the successful allograft. Iron replacement therapy successfully restores erythropoiesis in these patients.⁽¹⁶⁾

Another common cause of anemia after transplantation is bone marrow suppression owing to drug therapy with azathioprine or Mycophenolate mofetil (MMF). An effect that usually dose-related.

Other drugs, notably angiotensin-converting enzyme inhibitors and angiotensin receptor antagonists, may also inhibit erythropoiesis.⁽¹⁷⁾

Concerning the genitourinary system (item 1-3) indicates that the RTR_S got moderate severity mean of mean of scores. The sexual problems may occur after kidney transplantation and have to be taken into account because of their impact on the post transplantation life of the patient. One these problems in erectile dysfunction, which is inability to achieve and /or maintain an erection for satisfactory sexual performance.⁽¹⁸⁾

The seven hundred and twenty-seven renal transplant patients are reviewed with respect to occurrence of urinary tract infection (UTI): after renal transplantation. UTI is defined as the presence of both bacteriuria (105 CFU / ml) and pyuria (10 leukocyte /hpf) UTI developed in 11 patients (20-8 %) and 30 outpatients (4.2%) over a 1-year period. Among the outpatients, 12 had symptomatic infections, including acute pyelonephritis (7) and acute cystitis (5). Asymptomatic UTI is detected in 18 patients. In addition, asymptomatic bacteriuria without pyuria is found in 10 patients (1.4%). UTI is more common in diabetic patients, in some of whom underlying urinary tract complications are present. The administration of trimethoprim – sulfamethoxazole for about 6 months following renal transplantation is suggested to reduce the

frequency of UTI during this early post-transplantation period.⁽¹⁹⁾

Between August 1981 and May 2005, 1065 consecutive kidney transplants were performed at our center; 393 patients (36.9%) developed urological complications in the first 60

postoperative days. Urinary tract infection occurred in 28.5% of all patients. The major urological problems seen were urinary leakage and urethral obstruction in 6.2% and 1.4% of the patients. Two grafts were lost due to severe urinary leakage. No patient death occurred due to urological complication. The incidence of urological complications is mainly influenced by the surgical procedure of organ retrieval and ureterocystostomy, we observe a significant lower rate of urinary leakage but a higher rate of urinary tract infections in our series. Early diagnosis and treatment of urological complications may prevent further morbidity of our transplant patients.⁽²⁰⁾

In relation to dermatology system (item 7) indicates that the RTR_S got a highly severity mean of mean of score.

The dermatological complications of immunosuppressive therapy are common in RTR_S and can significantly impair QoL in certain individuals. Visible infections and cosmetic skin problems had most impact on QoL while a history of skin cancer had lesser impact. Early dermatological referral and careful choice of immunosuppressive may enhance the QoL, particularly in young and female RTR_S.⁽²¹⁾

Other possible effects included fluid retention, stomach irritation or ulceration, thinning of the hair, acne, mood swings, bone disease and delayed wound healing. Many of these side effects improve as the Prednisolone dose is lowered over the first year and, in general, are infrequently seen.⁽²²⁾

Regarding ocular system (item 1) indicated that the RTR_S got moderate severity mean of mean of score. This results agree with many literature which were stated that long term therapy uses of corticosteroids especially may cause an increase in intraocular pressure which may lead to cataract development or glaucoma in other patients.^(4,12,13,23)

CONCLUSION:

1. Issuing cards or bracelets to these patients stating their condition and their need to take their specified medicines, this will ensure that the patient will be given his medicine in time (e.g. corticosteroid) in case of accidents and transference to casualty units.

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2. Printing and distributing guide booklets to these patients clarifying the importance of regular visits to their doctors, and containing information about their operation, the medicines prescribed and their side effects and interactions with other medicines, nutrition ,activities to be avoided ,leisure activities and work. These booklets should be written in a simple style and handed out freely to these patients.

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