

Evaluation of the potential renal transplant recipient

Mike Stephens

Objectives of the Session

- Understand the reasons why we perform kidney transplants
- Learn the contraindications to transplantation (absolute and relative)
- Learn about the process for transplant assessment

Access to renal transplantation

- RRT of choice for patients with CKD Stage V **fit for major surgery and chronic immunosuppression**
- Mean increase in life expectancy of 10 years
 - more for younger patients
 - ? no survival advantage for over 65s
 - diabetics have even greater benefit
- Improved quality of life
- More cost effective

Survival Advantage of Cadaveric Transplantation

MORTALITY IN PATIENTS ON DIALYSIS AND TRANSPLANT RECIPIENTS

COMPARISON OF MORTALITY IN ALL PATIENTS ON DIALYSIS, PATIENTS ON DIALYSIS AWAITING TRANSPLANTATION, AND RECIPIENTS OF A FIRST CADAVERIC TRANSPLANT

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Survival Advantage of Cadaveric Transplantation

TABLE 3. OUTCOME AMONG RECIPIENTS OF FIRST CADAVERIC TRANSPLANTS, ACCORDING TO CHARACTERISTICS AT THE TIME OF INITIAL PLACEMENT ON THE WAITING LIST, 1991–1997.*

GROUP	RELATIVE RISK 18 MO AFTER TRANSPLANTATION (95% CI)†	P VALUE	TIME AT WHICH RISK OF DEATH EQUALS THAT IN REFERENCE GROUP	TIME AT WHICH LIKELIHOOD OF SURVIVAL EQUALS THAT IN REFERENCE GROUP	PROJECTED YEARS OF LIFE (IN REFERENCE GROUP) WITHOUT TRANSPLANTATION‡	PROJECTED YEARS OF LIFE WITH TRANSPLANTATION‡
			days after transplantation			
All recipients of first cadaveric transplants	0.32 (0.30–0.35)	<0.001	106	244	10	20
Age						
0–19 yr	0.33 (0.12–0.87)	0.03	3	5	26	39
20–39 yr	0.24 (0.20–0.29)	<0.001	11	57	14	31
40–59 yr	0.33 (0.29–0.37)	<0.001	95	251	11	22
60–74 yr	0.39 (0.33–0.47)	<0.001	148	369	6	10
Sex						
Male	0.34 (0.30–0.38)	<0.001	110	255	10	19
Female	0.30 (0.26–0.34)	<0.001	94	220	11	23
Race						
Native American	0.50 (0.27–0.96)	0.04	123	304	9	14
Asian	0.43 (0.25–0.75)	0.003	161	673	15	23
Black	0.52 (0.44–0.62)	<0.001	109	305	13	19
White	0.28 (0.25–0.30)	<0.001	100	220	9	19
Cause of end-stage renal disease						
Diabetes	0.27 (0.24–0.30)	<0.001	57	146	8	19
Glomerulonephritis	0.39 (0.31–0.48)	<0.001	130	360	11	18
Other	0.38 (0.33–0.43)	<0.001	137	353	12	20
Age and diabetes status						
20–39 yr, no diabetes	0.38 (0.28–0.50)	<0.001	14	220	20	31
20–39 yr, diabetes	0.18 (0.14–0.23)	<0.001	10	35	8	25
40–59 yr, no diabetes	0.38 (0.33–0.43)	<0.001	126	356	12	19
40–59 yr, diabetes	0.27 (0.23–0.32)	<0.001	66	181	8	22
60–74 yr, no diabetes	0.37 (0.30–0.46)	<0.001	159	442	7	12
60–74 yr, diabetes	0.46 (0.34–0.61)	<0.001	89	247	5	8

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Access to renal transplantation

- All patients with stage IV and V progressive CKD should be assessed for suitability
- Age is not a contraindication (although age related co-morbidities may be)
- Live donor renal transplant is the best option (ideally pre-emptive)

improved outcomes

expands donor pool

When to transplant?

- The sooner the better!

Transplant survival negatively related to duration of dialysis

- For cadaveric donor list should be within 6 months of anticipated start of dialysis or $GFR < 15$

Note current median wait >3 years

Graft survival in relation to duration of pre-transplantation dialysis

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TRANSPLANTATION

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WAITING TIME ON DIALYSIS AS THE STRONGEST MODIFIABLE RISK FACTOR FOR RENAL TRANSPLANT OUTCOMES

A PAIRED DONOR KIDNEY ANALYSIS¹

HERWIG-ULF MEIER-KRIESCHE^{2,3} AND BRUCE KAPLAN²

Graft survival in relation to duration of pre-transplantation dialysis

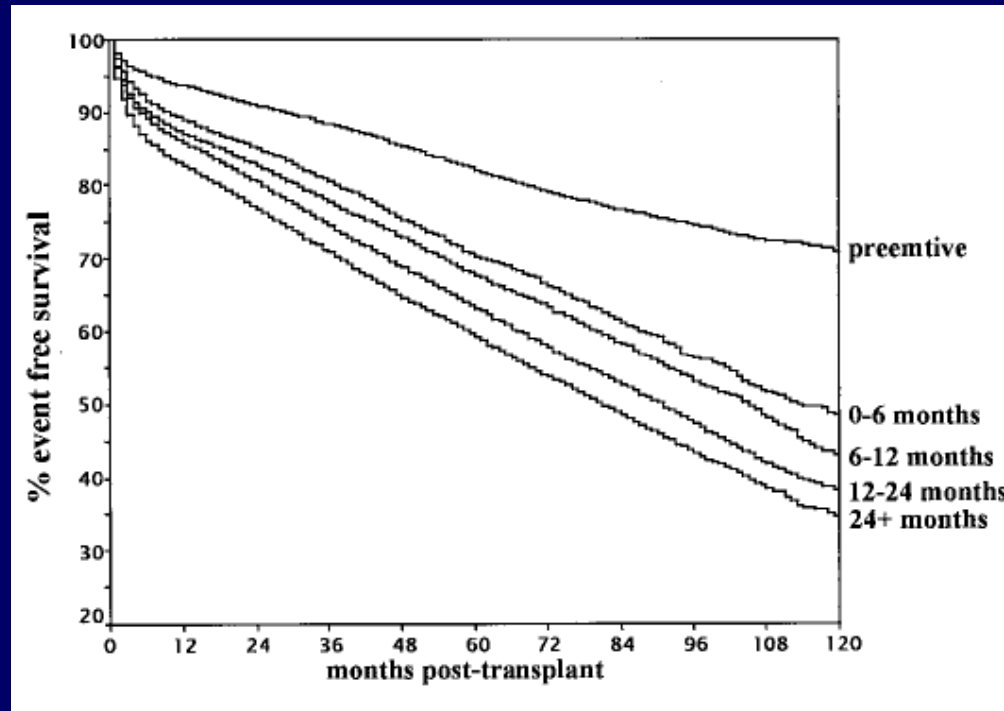


FIGURE 2. Unadjusted graft survival in 56,587 recipients of cadaveric transplants by length of dialysis treatment before transplant.

Graft survival in relation to duration of pre-transplantation dialysis

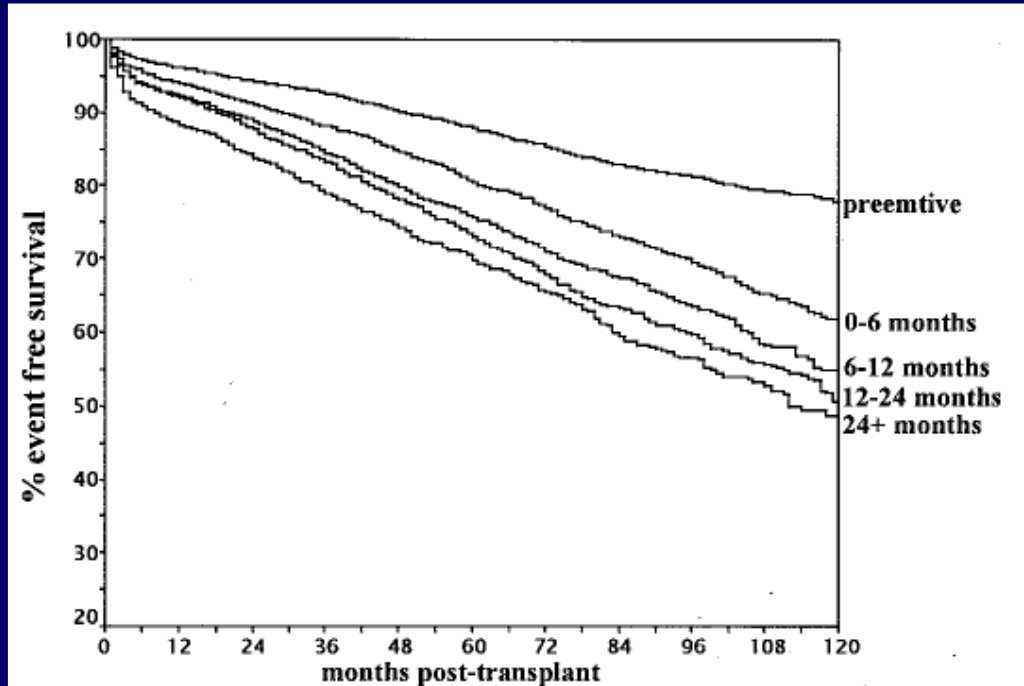


FIGURE 3. Unadjusted graft survival in 21,836 recipients of living transplants by length of dialysis treatment before transplant.

Pre-transplant assessment

- Ensure transplantation is technically possible
- Ensure recipients chances of survival are not compromised
- Ensure graft survival not limited
- Ensure pre-existing conditions not exacerbated
- Identify measures to minimise morbidity/mortality
- Inform patients of risks/benefits

Contra-indications

- Patient survival predicted less than 5 years
- Malignant disease not amenable to curative treatment
- Untreated HIV or already progressed to AIDS
- CVD not amenable to revascularisation and a predicted risk of death >50% at 5 years
- Predicted risk of graft loss >50% at 1 year

Anti-GBM disease with circulating antibody

Anti-GBM disease in Alports Syndrome following graft failure

? FSGS/IgA/membranoproliferative disease following graft failure

Contra-indications

- Patients unable to comply with immunosuppression
 - history previous non-compliance
 - history poorly controlled psychosis or regular use class A drugs
- Immunosuppression predicted to cause life threatening complications
 - untreated bacterial or persistent viral infection

Malignancy

- Not an absolute contraindication if treated
- Should screen for breast/colorectal/prostate/renal
- Israel Penn International Transplant Tumour Registry
- Risk of recurrence depends on type of cancer and time since treatment

Low recurrence rate (0-10%)

- Incidentally discovered renal tumours
- Lymphomas
- Testicular carcinoma
- Uterine carcinoma
- Thyroid carcinoma

Intermediate recurrence rate (11-25%)

- Carcinoma of the uterine body
- Wilm's tumours
- Colonic carcinoma
- Prostate carcinoma
- Breast carcinoma

High recurrence rate (>25%)

- Carcinoma of the bladder
- Sarcomas
- Skin cancers
- Symptomatic renal carcinomas
- Myelomas

Waiting period between treatment of cancer and transplantation

Less than 2 years

- Incidentally discovered renal carcinomas
- *In situ* carcinomas
- Small single focal neoplasms
- Low-grade bladder cancer
- Basal cell skin carcinomas

Waiting period between treatment of cancer and transplantation

5 years

- Malignant melanomas
- Breast carcinomas
- Colorectal carcinoma
- Non-*in situ* carcinoma of the uterus

Recurrence of primary disease

Primary glomerulonephritis

- FSGS 15-50% risk of recurrence (higher if previous recurrence)
Usually early recurrence- 10-18 days post transplant
- MN 20-30%
- MPGN very high histological recurrence for type II (80-100%), but clinical much less (10-20%)
- IgA >60% recurrence but may follow a relatively benign course
- Anti GBM recurrence high if anti-GBM antibody present but minimal without

Recurrence of primary disease

Systemic diseases

- Amyloidosis 10-40% recurrence, cardiac complications
- Lupus recurrence rare
- HSP histological recurrence 50%, 50% 2 year graft survival
- HUS 10-45% (note may develop *de novo* disease)
- ANCA vasculitis <20%

Recurrence of primary disease

Metabolic disease

- Diabetic nephropathy
- Primary hyperoxaluria
- Cystinosis

almost inevitable but graft loss low

high recurrence, ? combined liver Tx

no recurrence

Cardiovascular disease

- Cardiovascular disease accelerated in CKD patients
- CVD is the main cause of mortality after transplantation
- Careful assessment required
 - >50 years old
 - Diabetes Mellitus
 - Abnormal ECG
 - IHD/CCF/PVD/CVD
 - BMI>30
- Echo and referral for cardiac stress test
- Don't transplant if CVD not amenable to revascularisation and a predicted risk of death >50% at 5 years

Pre-transplant Cardiac Assessment

Box: Patient considered for transplantation

Circle: Is there a history of cardiac disease?

Yes

Box: Refer to Cardiology

No

Box: Request ECG CXR Echo

Circle: Are results abnormal?

Yes

Box: Discuss at MDT or with Cardiology

No

Circle: Is patient diabetic?

Yes

No

Circle: Is patient <50 years old?

No

Yes

Circle: Does patient have good functional capacity and ≤ 2 risk factors?

Yes

Box: ASSESSMENT COMPLETE

Box: Assessment of functional capacity needed

Circle: Is ECG normal and patient able to walk on treadmill?

Yes

No

Box: Request ETT

Box: Request MPI/DSE

Circle: Is result normal?

Yes

No

Box: Refer to Cardiology

Circle: Is result normal?

Yes

No

Box: ASSESSMENT COMPLETE

Risk Factors

- Premature IHD in 1° relative (♂ < 55 years; ♀ < 65 years)
- ↑ bp
- TC > 5.2; HDL < 0.9 mmol/l
- Smoker

Cardiovascular disease

- Remember peripheral vascular disease and cerebrovascular disease as well
- Doppler scan of iliac arteries (and veins) may be appropriate

Weight

- Recipient BMI associated with both operative complications and graft survival
- BMI>35 relative contraindication
- Patients need help to lose excess weight

Urological assessment

- Reflux
- Bladder
- Polycystic kidneys

Immunogenetic work-up of the recipient

- ABO blood group
- HLA-A, -B and –DR phenotypes
- Antibody screen every 3 months

Virology work-up of the recipient

- HIV
- Hepatitis B/C
- CMV
- EBV
- VZV

Screening for other diseases

- No need to screen for gallstones, peptic ulcer disease or diverticular disease

Summary

- Renal Transplantation is the 'gold standard' RRT
- Few absolute contraindications
- Assessment is aimed at quantifying risk:benefit ratio

Questions?