BACTERIAL INFECTIONS & EMERGING RESISTANCE IN RENAL TRANSPLANT RECIPIENTS

Dr Inam Danish Khan, Command Hospital, Kolkata, India, titan_afmc@yahoo.com

EV0912

INTRODUCTION

Renal Transplantation

- Major breakthrough for ESRD
- Improved graft survival with
- Potent immunosuppressive regimens
- Increased malignancies and infections
- Infections remain major determinants in the outcome of transplants

Post transplant infections

- Bacterial infections constitute 47% of all infections
- Endogenous infectons or
- Community/hospital acquired
- Prolonged morbidity and hospital stay
- Reduced graft survival
- Bacteremia, sepsis and mortality
- Etiology
- Immunosuppression
- Metabolic abnormalities
- Breach in mucocutaneous barriers
- Introduction of foreign bodies

- Data on antimicrobial resistance in transplant recipients is scanty
- Bacterial infections and antimicrobial resistance in renal transplant recipients (RTRs) studied

METHODS

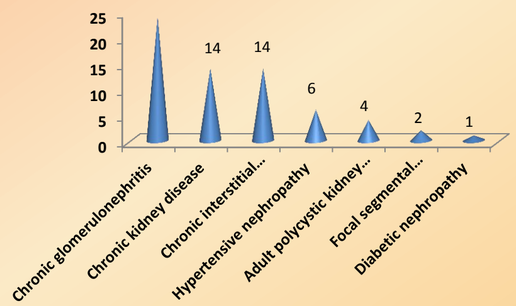
- 65 renal transplant recipients
- Pretransplant protocol included
  - HLA matching
  - Infection screen
- Vaccination- tetanus and pneumococcus
- Infection and antimicrobial susceptibility
- Data analyzed in post-transplant time

IMMUNOSUPPRESSIVE REGIMEN	Frequency	% age	95% Confidence Interval
Induction			
Thymoglobulin	13	20	10.28 – 29.72
Basiliximab	20	30.77	19.55 – 41.99
Daclizumab	8	12.31	4.32 – 20.29
No induction given	24	36.92	25.19 – 48.66
Maintenance			
MMF + Tacrolimus + Prednisolone	57	87.69	79.71 – 95.68
Cyclosporin + Tacrolimus + Prednisolone	4	6.15	0.31 - 12
Azathioprine + Tacrolimus + Prednisolone	3	4.62	-0.49 – 9.72
MMF + Everolimus + Prednisolone	1	1.54	-1.45 – 4.53

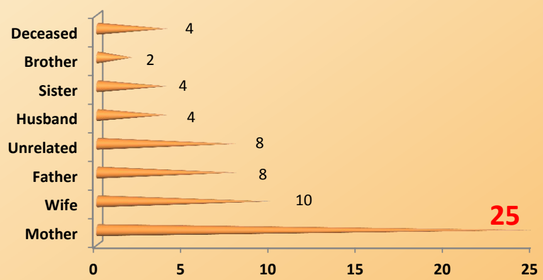
RESULTS

- Males - 92 (71%), Females - 38 (29%)
- First week - Post surgical infections
- Urinary, blood stream Infections
- Gram negative>Gram positive
- Simultaneous polymicrobial widespread multiresistant infections
- Successful antibiogram guided treatment

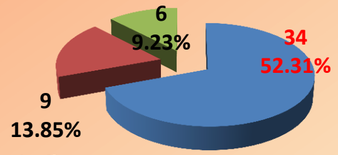
Indications for Transplantation



Sources of graft



Timeline of positive cultures



- 0-7 (Post surgical)
- 8-30 (Community/Nosocomial exposures)
- 31-180 (Immunosuppression induced susceptibility)

Organisms	Frequency	(% age)
Escherichia coli	67	29.91
Klebsiella pneumoniae	16	7.14
Enterobacter cloacae	7	3.12
Serratia marcescens	3	1.34
Citrobacter freundii	2	0.89
Proteus mirabilis	1	0.45
Morganella morganii	1	0.45
Providencia stuartii	1	0.45
Acinetobacter baumanii	28	12.5
Pseudomonas aeruginosa	40	17.86
Burkholderia cepacia	4	1.78
Strenotrophomonas maltophilia	3	1.34
Staphylococcus aureus	15	6.7
Staphylococcus hemolyticus	17	7.59
Staphylococcus epidermidis	5	2.23
Staphylococcus hominis	8	3.57
Enterococcus faecium	3	1.34
Enterococcus faecalis	3	1.34
Total	**224**	**100**

Profile of Colonizations/Cinical infections

	Colonizations		Clinical Infections	
	Frequency	% age	Frequency	% age
Urinary tract isolates	53	81.54	3	4.62
Blood stream isolates	18	27.69	Nil	Nil
Miscellaneous isolates	13	20	Nil	Nil
Simultaneous polymicrobial isolates	8	12.31	3	4.62
Multiple organisms in a patient spread in time	6	9.23	Nil	Nil
Prolonged (30 days) isolation of same organism	4	6.15	Nil	Nil
Same pathogen isolated from multiple samples	1	1.54	3	4.62
Pre transplant infections treated before surgery	2	3.1	2	3.1
Post transplant infections treated	3	4.62	3	4.62

Antimicrobials — **Cumulative Susceptibility expressed as %age**

	Escherichia coli		*Klebsiella pneumoniae*		*Acinetobacter baumanii*		*Pseudomonas aeruginosa*	
	RTR	NIP	RTR	NIP	RTR	NIP	RTR	NIP
Coamoxiclav	11.54	25	Nil	50	-	-	-	-
Piperacillin-Tazobactam	100	50	Nil	66.67	-	-	100	75.86
Ticarcillin-clavulanate	30.77	37.5	20	50	26.92	40	18.52	55.17
Aztreonam	7.69	31.25	Nil	50	-	-	14.81	13.79
Imipenem	84.62	87.5	50	83.33	50	85	29.63	58.62
Meropenem	33.33	100	Nil	100	100	33.33	66.67	34.62
Ertapenem	76.92	81.25	33.33	83.33	-	-	-	-
Cefotaxime	7.69	31.25	Nil	50	15.38	45	7.41	20.69
Ceftazidime	7.69	31.25	Nil	50	19.23	30	22.22	34.48
Ceftriaxone	7.69	31.25	Nil	50	23.08	60	11.11	37.93
Cefipime	7.69	31.25	Nil	50	23.08	50	18.52	41.38
Amikacin	61.54	81.25	33.33	83.33	30.77	40	18.52	24.14
Cotromoxazole	11.54	37.5	20	50	23.08	75	-	-
Ciprofloxacin	7.69	12.5	10	50	19.23	75	29.63	51.72
Ofloxacin	-	-	-	-	-	-	-	-
Levofloxacin	11.54	12.5	20	66.67	19.23	80	29.63	62.07
Colistin	100	100	100	100	100	100	100	100

DISCUSSION

- Post surgical MDR (ESBL) *E. coli* urinary infections – Hospital acquired
- Renal recipients form an uncomparable population who cannot be matched for age, sex, risk and prevalence of infections
- Urinary infections common in RTRs
  - Prolonged catheterization - biofilms
  - Deceased donor kidneys
- Risk of infection in transplant recipients
  - Donor and recipient exposures
  - Net state of immunosuppression
  - Infection prophylaxis
- Rejection episodes managed by immunosuppressive therapy
  - Increased exposure to hospital strains
  - Exposure to reserve antimicrobials
  - Routine prophylaxis - selection pressure

CONCLUSION

- Infection prophylaxis tends to reduce but not eliminate the risk of infections
- High index of clinico-microbiological suspicion
- Frequent routine and specific surveillance required