Effect of Long Term, Low Dose Aspirin Therapy on Renal Graft Function

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Introduction:

Despite the significant improvement in immunosuppressive protocols for renal transplantation, long term success of renal transplantation is still limited by the occurrence of interstitial fibrosis and tubular atrophy (IFTA) (1,2). Some studies have shown that aspirin decreases the severity of kidney ischaemia–reperfusion injury and the development of tubular atrophy in animal models (3). This study aims to assess the effect of low dose aspirin therapy started at the time of transplantation on long term graft function.

Methodology:

- 141 renal transplant patients in Lancashire Teaching Hospitals from 2000 to 2010
- Patients on aspirin before transplant or had CAD were excluded
- Serum creatinine and eGFR were reviewed at 3 monthly intervals over 15 years
- Main indication for starting aspirin therapy was graft with multiple arterial anastomoses

77 patients on long term low dose aspirin post transplant | **64 patients not on aspirin**

Univariate multi-level mixed linear regression analysis over 15 years period post transplantation were carried out to assess the effect of low dose (75 mg) once daily Aspirin on the allograft function. Confounding factors were taken into account including age, gender, cold-ischaemia time, number of previous transplants, type of transplant (living or deceased donor), number of rejections, HLA mismatch, anti-hypertensive and statin treatment.

Results:

The mean time of cold ischemia was significantly higher amongst patients in the no aspirin group compared with the aspirin group (p=0.026). There are a higher proportion of patients who had statin medication in the aspirin group compared with no aspirin group (p=0.088). However, this did not reach statistical significance at the 5% level as shown in table 1. Mean creatinine levels at different time points post-transplantation are shown in table 2 and in figure 1. Aspirin was not significantly associated with creatinine (P=0.336) when adjusted for age at transplantation and cold ischaemia time.

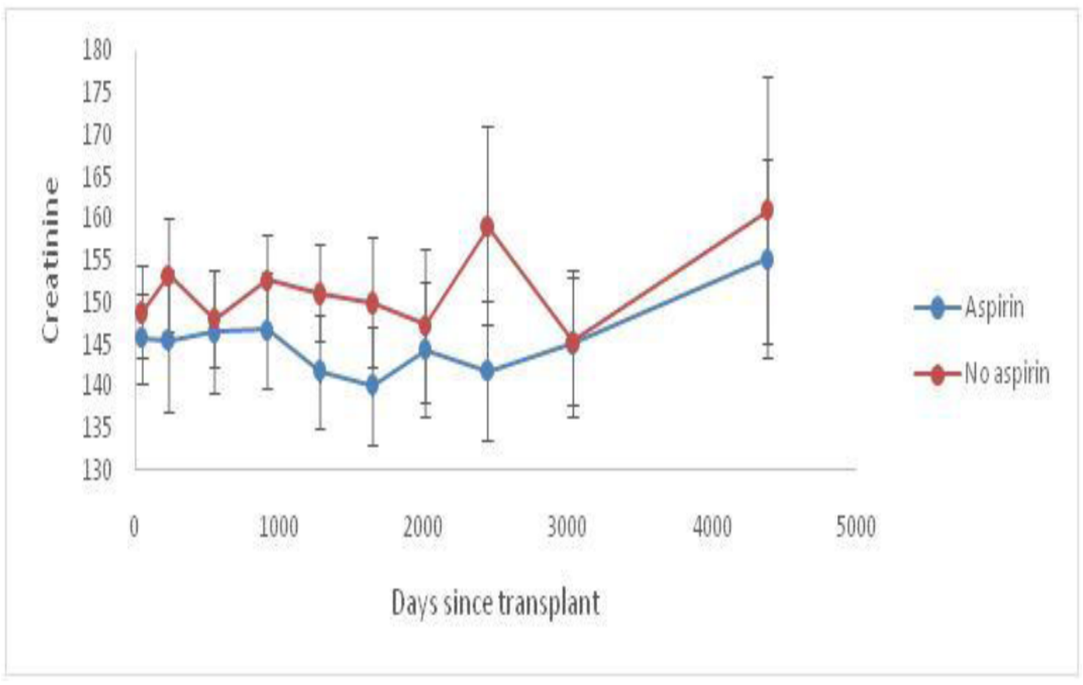
Table 1: Comparison of patient characteristics and clinical outcomes between aspirin and no-aspirin group

Variable		No Aspirin (n=64)	Aspirin (n=77)	P-value
Age at transplantation Mean (SD, Range)		**42.1 (11.5, 20.0 to 71.0)**	**46.9 (11.7, 20.0 to 68.0)**	**0.015**
Gender N (%)	Male	40 (62.5)	53 (68.8)	0.478
Living-donor transplant N (%)	Present	6 (9.4)	16 (20.8)	0.101
Time of cold ischemia (mins) Mean (95% CI)		**1125.1 (1008.9 to 1241.3)**	**938.7 (822.5 to 1054.9)**	**0.026**
Acute allograft rejection N (%)	Present	3 (4.7)	5 (6.5)	0.728
HLA mismatch Median (IQR)		2.0 (1.0 to 3.0)	2.0 (1.0 to 3.0)	0.970
First transplantation N (%)	Present	51 (79.7)	64 (83.1)	0.666
Number of antihypertensive agents Mean (95% CI)		1.8 (1.5 to 2.1)	1.6 (1.3 to 1.8)	0.280
Statin medication N (%)	Present	31 (48.4)	49 (63.6)	0.088
Baseline creatinine Mean (95% CI)		149.7 (138.4 to 161.1)	146.4 (135.4 to 157.3)	0.673

Table 2 :Mean Creatinine levels at different time points post-transplant in Aspirin and no Aspirin groups

Time point (days after transplant date)	Creatinine					
	No Aspirin Group			Aspirin Group		
	N	Mean	SE	N	Mean	SE
0 to 90 (baseline measure)	66 patients, 66 measurements	148.91	5.50	82 patients, 82 measurements	145.71	5.33
91 to 365	42 patients, 118 measurements	153.32	6.69	57 patients, 192 measurements	145.27	8.50
366 to 730	59 patients,227 measurements	148.11	5.81	72 patients, 280 measurements	146.47	7.30
731 to 1095	63 patients,224 measurements	152.73	5.48	74 patients,272 measurements	146.74	6.99
1096 to 1460	64 patients, 239 measurements	151.10	5.78	75 patients, 258 measurements	141.74	6.67
1461 to 1825	62 patients, 240 measurements	150.02	7.79	74 patients, 274 measurements	140.12	7.09
1826 to 2195	56 patients, 210 measurements	147.26	9.05	67 patients,245 measurements	144.38	8.06
2196 to 2690	50 patients, 238 measurements	159.18	11.75	62 patients, 286 measurements	141.87	8.32
2691 to 3380	42 patients, 246 measurements	145.41	7.57	52 patients, 304 measurements	145.11	8.63
3381 to 5390	24 patients, 269 measurements	161.06	16.06	35 patients, 314 measurements	155.21	11.86

Figure 1: Mean creatinine levels at different time points after transplantation for patients in the Aspirin and the No Aspirin group



Conclusion:

- Low dose aspirin started at the time of transplantation has no significant effect on renal allograft function over 15 years period post-transplant.
- The major limitation of our study is its retrospective design. Because of the non-randomisation of the groups, homogenecity between them could be impaired.
- More prospective randomised trials are needed to confirm these findings.

References

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