

ZERO-TIME KIDNEY HISTOLOGY PREDICTS EARLY GRAFT FUNCTION

Helena Viana, Fernanda Carvalho, Maria João Galvão, Ana Santos, Fernando Nolasco
Morphological Renal Laboratory and Kidney Transplant Department, Hospital Curry Cabral, Lisboa, Portugal

Objectives

- To determine the impact of histological factors observed in zero-time biopsies on 3 years post transplant kidney allograft function.
- To compare the semi-quantitative Banff Classification with digital

Methods

- Biopsies from allograft kidney cadaver performed at implantation time in the last three years (2005-2007), with at least three year follow-up, are reviewed.
- Chronic changes in glomeruli, vessels, tubules and interstitium (Cg, Ah, Cv, Ct, Ci) were semi quantitatively scored (0-3) using the Banff Working Classification. Glomerulosclerosis (GE) and GE / Total glomerulus are registered.
- By adding these individual chronic changes a Banff Chronic Sum Score was generated.
- Sirius Picro Red staining was used for identification of collagen I and III under polarized light. (Fig.1)
- Percentage of cortical biopsy area stained was quantified using a computer program (Leica® system).
- Glomerular filtration rate (GFR) at 3 years was calculated according to Cockcroft-Gault formula

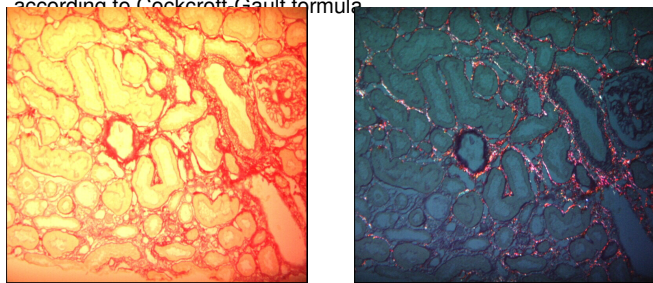


Figure 1

Results

- 63 biopsies evaluated.
- Immunosuppressive protocols included induction with ATG or Basiliximab, calcineurin inhibitors (tacrolimus in 86,9%) or mTOR inhibitors (7,1%) plus mycophenolate mofetil and prednisolone.
- The histological, clinical features and three years GFR value are described in Tables 1 and 2.

	Mean	Median	SD
PSR (%)	1.62	1.50	±1.07
Ct	0.15	0.00	±0.51
Ci	0.14	0.00	±0.50
Cg	0.00	0.00	±0.00
Cv	0.39	0.00	±0.63
Banff chronic Sum	0.68	0.00	±1.34
Ah	0.28	0.00	±0.55
GE	0.35	0.00	±0.66
GE/TG	0.03	0.00	±0.07

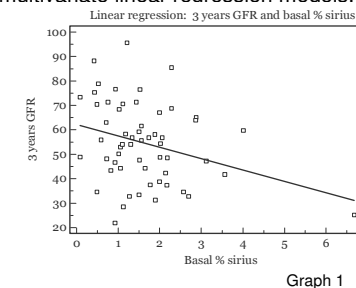
Table 1

	Mean	Median	SD
Receptor age (years)	50.1	53.0	± 11.1
Donor age (years)	48.8	51.1	±13.6
Total HLA Match (n)	2.90	3.00	±0.90
DR HLA Match (n)	1.40	1.00	±0.60
Cold ischemia (hours)	16.3	16.1	±2.80
3 years GFR (ml/min/1.73)	54.6	54.3	±16.5
Receptor gender (n)	♀=23	♂=40	
Donor gender (n)	♀=24	♂=39	
Painel reactivity antibody (n)	<25% 57	25-75% 4	>75% 2

Table 2

Results

- A significant negative linear regression between %PSR/ GFR at 3 year post-transplantation was established. (Graph 1)
- A significant negative correlation between the individual Banff scores, Ah, BCS and 3 years GFR were found.
- No correlation was found between SG, SG/TG and 3 years GFR.
- No correlation was present between fibrosis parameters evaluated by semi-quantitative and digital methods.
- BCS and donor kidney age had significant negative predictive value in multivariate linear regression models.



Graph 1

Conclusions

- The % cortical area stained by Sirius predicts short term kidney function in univariable linear regression but involves extra-routine and expensive-time work.
- We think that Sirius Picro Red must be regarded as a research instrument.
- The Banff chronic sum seems a good and easy to perform tool, available to every pathologist, with significant predictive short-term value.