

with resolution of AKI, we observed a persistence of macrophages and T cells (>10days).

Conclusions: The amount of renal epithelial cells in the urine seems to directly reflect tissue damage in AKI. Immune cells can be monitored in the urine of patients with AKI and persisted longer than the renal injury itself. This suggests that immune cells participate in mediating damage and tissue repair in human AKI.

P43

THE ROLE OF B7.1 AND suPAR IN PODOCYTE INJURY AND FOCAL SEGMENTAL GLOMERULOSCLEROSIS

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Introduction: The mechanism of injury to podocytes in focal segmental glomerulosclerosis (FSGS) remains unclear. Both B7.1 (CD80) and suPAR have been proposed to cause FSGS but these findings have not been validated. To survey these markers as potential mediators of podocyte injury and as an aid to histologic diagnosis of FSGS we evaluated the immunohistochemical expression of (1) B7-1 and suPAR in native and transplant kidney biopsies, and (2) suPAR in an experimental mouse model of FSGS.

Methods: Consecutive kidney biopsies from the surgical pathology files were selected for study groups of FSGS (n=10) and early post-transplant recurrent FSGS (n=10). Native kidney biopsies with membranous nephropathy (MN) (n=10) and minimal change disease (MCD (n=5), and 6 month post-transplant protocol biopsies with normal morphology [n=10] served as controls. Immunostains for B7.1 and suPAR were performed on formalin-fixed paraffin-embedded and frozen sections with immunoperoxidase (IHC) or immunofluorescent (IF) methodology and the localization of the positive signal was determined via co-stain with podocyte marker synaptopodin. Appropriate positive method controls were available. In addition, uPAR expression was assessed in the kidneys of wild type and suPAR deficient (suPAR -/-) mice infused with suPAR. The mouse kidneys were also evaluated by electron microscopy in conjunction with renal functional studies.

Results: B7.1 was not expressed in native kidneys with FSGS or MCD or in transplant kidneys with recurrent FSGS. In MN, B7.1 was localized only to the immune deposits. No apparent suPAR immunoreactivity was present in native kidneys or recurrent FSGS. suPAR infusion did not produce proteinuria or effacement of podocytes in wild type or suPAR deficient mice. uPAR was detected by IHC along the glomerular endothelial cells but not in podocytes in wild type mice while uPAR stains remained negative in suPAR deficient mice even after suPAR injection.

Conclusions: The data suggest that B7.1 and suPAR may not play a significant role in podocyte injury in native and transplant kidneys with FSGS. B7.1 and suPAR immunostains have a limited value as diagnostic immunophenotypical markers in routine kidney biopsies with FSGS and recurrent FSGS post-transplant.

P44

MARKERS OF OXIDATIVE STRESS IN PATIENTS OF SYSTEMIC LUPUS ERYTHEMATOSUS WITH OR WITHOUT LUPUS NEPHRITIS

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Introduction: The relevance of oxidative stress in systemic lupus erythematosus (SLE) in humans is not fully understood. Moreover, none of the previous studies have specifically studied the impact of oxidative stress in patients of lupus nephritis. We conducted this study to evaluate the markers of oxidative stress in patients of SLE with or without lupus nephritis and to correlate them with clinical presentation, disease activity, and type & severity of renal manifestations.

Methods: This was a prospective study including patients diagnosed to have SLE on the basis of ACR criteria. The study participants were divided into two groups depending on presence or absence of renal involvement, which was defined as either abnormalities in renal function test (serum creatinine ≥ 1.2 mg/dl) or urine examination (urine protein excretion ≥ 500 mg/day or presence of RBCs in urine) along with renal biopsy evidence of lupus nephritis. After inclusion, patient's particulars were noted including clinical manifestations, investigations, SLE Disease Activity Index (SLEDAI), details of renal involvement, renal biopsy, treatment received and the outcome. In both the groups, an additional 5 ml of venous blood sample was drawn after overnight (8-10 hours) fasting for analyzing the markers of oxidative stress. We studied Malondialdehyde (MDA) and Isoprostane as markers of lipid peroxidation; reactive nitrogen intermediates (RNI) as markers of oxidative protein damage; 8-hydroxy deoxy guanosine as marker of oxidative DNA damage and Superoxide dismutase (SOD) as a marker of antioxidant activity.

Results: During the study period a total of 120 cases were included (60 without lupus nephritis, 60 with lupus nephritis). The mean age of study population was 29 ± 9 years and 115 were females. SLEDAI was significantly higher in patients with nephritis as compared to non-nephritis group. The mean values of serum MDA, 8-Isoprostane, 8-Hydroxy 2-deoxyguanosine and RNI were significantly higher in nephritis group, while there was no difference in the levels of SOD. Significant positive correlations were observed between RNI and SLEDAI score ($r = 0.333$, $p < 0.01$), and MDA and SLEDAI score ($r = 0.269$, $p < 0.01$), while none of the markers showed significant correlation with serum creatinine. There was no significant correlation between these markers and severity of renal dysfunction, while 8-Hydroxy 2-deoxy guanosine levels showed significant negative correlation with degree of proteinuria ($r = -0.345$; p value 0.007). MDA levels were significantly higher in patients with proliferative lupus nephritis as compared to non proliferative nephritis. During six months follow-up, we noted 7 deaths in nephritis group as compared to none in non-nephritis group. The mean value of 8-Hydroxy 2-deoxy guanosine was significantly higher in those who died; however there was no significant difference in other oxidative markers.

Conclusions: SLE patients with nephritis have higher levels of oxidative stress. Increased oxidative stress in nephritis patients correlates more with SLEDAI than with type or severity of renal dysfunction.

P45

IL-2 THERAPY REDUCES RENAL INFLAMMATION AND CELLULAR ACTIVITY OF INTRARENAL CD4+ CONVENTIONAL T CELLS IN LUPUS

PRONE MICE WITH ACTIVE LUPUS NEPHRITIS

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Introduction: Systemic lupus erythematosus (SLE) is an autoimmune disease characterized by an acquired IL-2 deficiency in the peripheral lymphoid organs and peripheral blood of murine and human SLE (Humrich et al. 2010, von Spee-Mayer et al. 2015). Kidney-infiltrating CD4+T cells play a crucial role in the progression of lupus nephritis (LN). However, the role of kidney-infiltrating T cells in the pathogenesis of LN is still not completely understood. The aim of this study was to investigate whether an IL-2 deficiency is also present in the inflamed kidney, thereby contributing to an impaired intrarenal Treg function and renal inflammation. Furthermore it was investigated if an IL-2-based immunotherapy can directly act on intrarenal Treg and whether this has consequences on the kidney inflammation.

Methods: Intrarenal CD4+ T cells phenotype of (NZBxNZW) F1 mice (NZB/W) with active LN was assessed and the in vitro IL-2 production of intrarenal CD4+CD44+ T cells were determined by flow cytometry. Furthermore, NZB/W mice were treated with recombinant IL-2 for a total of 31 days. Kidneys were histological scored using the activity index (AI) and the intrarenal CD4+ T cell phenotype was assessed in IL-2 treated mice compared to control mice.

Results: Intrarenal Treg exhibit characteristic signs of IL-2 deprivation in parallel to a progressive hyperactivity of intrarenal Tcon with disease progression. These Treg defects were associated with a diminished production of IL-2 and an increased production of IFN γ by kidney-infiltrating Tcon. Furthermore, IL-2 therapy could increase the frequency of intrarenal natural CD25+Helios+Treg, strongly reduced the hyperactivity of intrarenal Tcon, ultimately resulted in a reduced histological AI and prolonged the survival of IL-2 treated lupus mice.

Conclusions: Our data indicate that on the one hand an IL-2 deficiency is also present in the inflamed kidney, thereby contributing to renal inflammation. On the other hand, long term IL-2 treatment is able to reduce hyperactivity of intrarenal Tcon and to diminish kidney inflammation in lupus prone mice. This shows the close relation between intrarenal IL-2 deficiency and resultant Treg defects, the Tcon hyperactivity and the severity of LN. These results also provide additional rationales for an IL-2 based immunotherapy to treat patients with SLE, in particular with renal involvement.

P46

LOW DOSE CYCLOPHOSPHAMIDE AS AN INDUCTION AGENT IN PROLIFERATIVE LUPUS NEPHRITIS PATIENTS IN CENTRAL INDIA - AN AFFORDABLE & VIABLE OPTION

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Introduction: Glomerulonephritis is a severe manifestation of systemic lupus erythematosus (SLE) that is usually treated with an extended course of intravenous (IV) cyclophosphamide (CYC). Given the side effects of high dose cyclophosphamide, we evaluated the efficacy of a course of low fixed dose IV CYC prescribed as a remission-inducing treatment, followed by (AZA) as a remission-maintaining agent.

Methods: In this single center retrospective (january 2010 to january 2014) clinical study, we evaluated 40 SLE patients with proliferative glomerulonephritis who were given fixed low dose IV CYC regimen (500 mg 6 monthly pulses) followed by azathioprine (AZA). AZA (2mg/kg/day) was started 2 weeks after the last CYC injection. Oral prednisone was also given, beginning at a dose of 1 mg/kg per day and then tapering over a period of months to alternate-day low dose maintenance therapy. Remission was defined as <10 red blood cells per high power field, no cellular casts, and proteinuria <1 g/day. Treatment failure was defined as requiring supplemental immunosuppression, doubling of the serum creatinine, or death. The renal relapse was defined as doubling of the urine protein-to-creatinine ratio or by an increase in the serum creatinine to 1 & 1/2 times above normal.

Results: Mean serum creatinine at the time of initiating treatment was 1.8 mg/dL and mean urine protein excretion of 3.5 g/day. 7 of the 40 patients (17.5%) experienced treatment failure, while rest of all patients achieved remission (partial or complete) during induction phase. All seven treatment failure patients progressed to CKD, as they could not afford other therapies/modalities available for further treatment. Maintenance therapy with azathioprine was well tolerated. 7 of 33 patients in remission developed renal flares which were treated successfully with pulse steroids followed by tapering of steroids over 6 months.

Conclusions: Cyclophosphamide as an induction regimen followed by maintenance with AZA is a viable and efficient agent for the treatment of proliferative lupus nephritis in a developing world with economic constraints.

P47

THE ANTIRENAL AUTOREACTIVE CD4+ T CELL RESPONSE IN HUMAN LUPUS NEPHRITIS

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Introduction: Lupus nephritis (LN) is one of the most serious complications of systemic lupus erythematosus (SLE). Local MHC II upregulation and a T cell rich infiltration suggest an antigen-specific immune response against kidney structures. Nevertheless, no renal autoantigen is known at present.

Methods: The TCR β repertoire of peripheral blood and urinary T cells was analyzed by TCR β chain sequencing and subsequent sequence analysis. T cells from SLE Patients were stimulated with different kidney lysates. Reactivity of T cells upon antigen stimulation was tested using 3H+ Thymidin uptake in T cell libraries and by detection of the activation markers CD40L and CD69 by flow-cytometry. Further renal candidate autoantigens were identified