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Original Article

Clinicopathological characteristics of lupus nephritis in Western region of Saudi Arabia: An experience from two tertiary medical centres

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ABSTRACT

Background: We present the clinicopathological characteristics of lupus nephritis (LN) in a subset of population from Western Saudi Arabia.
Materials and methods: We retrospectively analysed previously diagnosed 148 renal biopsies in cases with systemic lupus erythematosus (SLE) from two medical centres. Microscopic slides from these patients were retrieved and re-assessed according to the WHO and ISN/RPS classifications by histological, immunological and electron microscopic items. Clinical and laboratory findings were retrieved from patients' medical records.
Results: Median age of patients years is 24 (range: 2–65), females (85.1%), and males (14.9%). The frequency of cases in each class according to WHO classification and ISN/RPS classification was nearly the same and was as follows: class I (0%), class II (12.8%), class III (8.8%), class IV (51.4%), class V (23%), and class VI (4%). For IV class, IV-G (41.9%) subcategory was higher than IV-S (9.4%). Immunofluorescence examination revealed positive staining for IgG and C3 in 98.4% and 97.6% of cases respectively. In conclusion, class IV (51.4%) is the predominant class, followed by class V (23%).
Conclusion: There are differences in clinicopathological data reported from this study with other studies. Continuous reporting from different national specialised nephrology centres is recommended for better elucidation of the natural history of lupus nephritis in Saudi patients.

1. Introduction

Systemic lupus erythematosus (SLE) is a chronic disease with autoimmune pathogenesis and manifests as low grade inflammation and may advance to multiorgan fatal damage [1]. In SLE patients who have abnormal urine and/or reduced renal function, renal biopsy is performed to provide prognostic data and direct the initial therapeutic approach [2]. The incidence of lupus nephritis (LN) in SLE is divergent around the world and may be related to different ethnic and genetic background [3–5].

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Most patients with LN have an immune complex-mediated glomerular disease, often associated with tubulointerstitial changes with or without immune deposits. Involvement of the renal vasculature is also common, ranging from indolent vascular immune deposits to fibrinoid necrosis and thrombotic microangiopathy [6]. Renal involvement is reflected by different clinical and laboratory manifestations which vary considerably around different geographic distribution [5].

Currently, renal histological changes are identified according the International Society of Nephrology (ISN)/Renal Pathology Society (RPS) Classification of LN [7] which is entirely based on glomerular changes. It was designed to eliminate ambiguities and standardise definitions. Major changes from 1995 modified WHO classification [8] include better standardisation of renal biopsies in lupus patients [7] and separation of segmental and global lesions [9] which was suggested by a study in 2000 [10] who concluded that cases with diffuse proliferative LN and segmental lesions have poorer prognosis than those with global diffuse proliferative.

We aim in this study to evaluate the pathological and clinical characteristics of a subset of LN cases from two medical centres in the Western region of Saudi Arabia and compare these findings with findings from other regions in Saudi Arabia, near-by countries, and international figures.

2. Materials and methods

The study group comprised a total of 148 biopsies diagnosed as lupus nephritis from two large tertiary medical centres in Jeddah (Western region of Saudi Arabia); King Abdulaziz University Hospital (period from 1995 to 2011) and King Faisal Specialist Hospital and Research Centre (2000–2011). Patients' histological materials were retrieved from the archive of department of Pathology in the above mentioned centres. The microscopic criteria described in LN, and the definition of terms, were collected from the literature. The renal biopsy specimens were studied by light microscopy, immunofluorescence, and electron microscopy. Haematoxylin and Eosin (H&E), Periodic Acid-Schiff (PAS), Masson Trichrome and Jones Methenamine Sliver (JMS) stained slides of cases were re-examined to retrieve data according the standards of defining diagnostic terms reported elsewhere [11].

The activity and chronicity indices (AI and CI) were retrieved if were reported whenever possible and re-reported for cases that were not reported using the semi-quantitative scoring schema developed by Austin et al. [12]. Each activity and chronicity factor is graded on a scale of 0, 1, 2, and 3 depending on the percentage of involvement of all viable glomeruli (AI) and on all glomeruli (CI) present in sections; where 0 (absence of lesions), 1 (lesions involving up to 25%), 2 (lesions involving 25–50%), and 3 (lesions involving >50%). The activity items cellular crescents and necrosis are weighed by a factor of x2.

Results of immunofluorescence for immunoglobulin G (IgG), immunoglobulin A (IgA), immunoglobulin M (IgM), C3, C4, C1q and fibrinogen deposits were semi-quantitatively graded from 0 to 4 according to the intensity of fluorescence. The immunofluorescence findings of each patient were collected and analysed. Electron microscopy reports were used whenever needed for subendothelial, subepithelial, mesangial and intramembranous electron dense deposits. Renal involvement was assessed and cases were reclassified using both the modified WHO and ISN/RPS classifications {wherever were not used}. For categorisation of classes III and IV of ISN/RPS classification, active lesions were considered according to the presence of cellular crescents, fibrinoid necrosis, and a chronic lesion when glomerular sclerosis, and interstitial fibrosis are present [7].

Patients' clinical data were collected from the medical archives of departments of Internal medicine. The clinical findings were analysed as patients' age, sex, nationality, the presence of hypertension, diabetes, renal dialysis before and after renal biopsy, renal impairment before renal biopsy, and nephrotic syndrome. Laboratory results were also analysed including; haemoglobin, erythrocyte sedimentation rate ESR, serum C3, C4, anti-nuclear antibodies (ANA), anti-DNA, CRP, anti-cardiolipin IgM, anti-cardiolipin IgG, urine protein, urine RBC, Urine cast, and 24 h protein were also retrieved. Revision of therapies applied were also collected; hydroxychloroquine (Plaquenil®) azathioprine, cyclophosphamide, pulse steroid prednisone, mycophenolate mofetil (CellCept®), methotrexate, cyclosporine. Patient mortality records were collected.

The work in this study was in accordance with the ethics committee of Faculty of Medicine, King Abdulaziz University, Saudi Arabia, and according to the ethical guidelines of the 1975 Declaration of Helsinki. Statistical analysis was done in the Statistical Package for Social Sciences (SPSS®) version 16. Frequencies and results were presented as median (range).

3. Results

Median age of patients is 24 years and range is (2–65). Females constitute 126 (85.1%) and males 22 (14.9%) with

Table 1
Distribution of immunofluorescence findings.

	Negative	Trace	1+	2+	3+	4+
IgG	2 (1.6%)	0 (0%)	10 (8%)	35 (28%)	71 (56.8%)	7 (5.6%)
IgA	18 (14.7%)	4 (3.3%)	34 (27.9%)	46 (37.7%)	20 (16.4%)	0 (0%)
IgM	11 (8.9%)	1 (0.8%)	43 (34.7%)	51 (41.1%)	18 (14.5%)	0 (0%)
C3	3 (2.4%)	0 (0%)	16 (12.9%)	38 (30.7%)	62 (50%)	5 (4%)
C4	24 (32.9%)	13 (17.8%)	28 (38.3%)	7 (9.6%)	1 (1.4%)	0 (0%)
C1q	12 (12%)	0 (0%)	22 (22%)	40 (40%)	24 (24%)	2 (2%)
Fibrinogen	16 (64%)	1 (4%)	4 (16%)	3 (12%)	1 (4%)	0 (0%)