

Remission in children with lupus nephritis - a comparison of different definitions

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Background: Nephritis (LN) occurs in up to 80% of patients with lupus, being an important factor for the long term prognosis. The aim of our study was to describe, in a worldwide cohort, the number of children who went into remission. We compared the outcomes of different published definitions of remission.

Methods: We studied 248 patients with biopsy proven LN class III or higher diagnosed during the last 10 years.

Children were followed for twenty-four months regarding their renal outcome. They were treated according to local protocols. Six definitions of remission used in literature were applied to compare the number of children entering remission.

Results: Children characteristics are summarized in table 1. Only 4.8%-16.1% of the children went into stable remission during the first two years with any of the definitions. The different definitions yielded significantly different outcomes, with that of the ACCESS trial having the highest percentage of patients (16.1%) in stable remission.

Proteinuria at diagnosis was the only clinical risk factor for not achieving complete remission at any time. Haematuria, serum creatinine and eGFR at onset could not predict a worse prognosis in our study. Also gender, ethnicity and age didn't influence outcomes.

Conclusion: A surprisingly low percentage of children with LN in an international cohort went into stable remission. The definition used did significantly change the number of children that reached remission. This highlights the strong need for randomized studies also in the paediatric population to define more effective treatments of this vulnerable group of children.

Table 1 Patients characteristics

Age at diagnosis mean(\pm SD)	11y,4m (\pm 3y,4 m)
Gender: female	177 (71,4%)
Ethnicity	
Asian	85 (34,3%)
Indian	61(24,6%)
Caucasian	53 (18,6%)
Hispanic	17 (6%)
Not given/missing	12 (4,8%)
Subs African/African American	12 (4,8%)
Heterogenous	6 (2,4%)
Semitic-Arabic	2 (0,8%)

Table 2. Definitions of remission and patients in stable remission after induction treatment (from 6th month to 24th month of follow-up)

Definitions of remission	Bristol-Myers Squibb (BMS) trial	American College of Rheumatology (ACR) recommendations	Lupus Nephritis Assesment with Rituximab (LUNAR) trial	Aspreva Lupus Management Study (ALMS) trial	Abatacept and Cyclophosphamide Combination: Efficacy and Safety Study (ACCESS) trial	Kidney Disease Improving Global outcomes (KDIGO) guidelines
	No haematuria AND a variation of creatinine $\leq +10\%$ of creatinine based on reference value for age AND Proteinuria (mg/mg) $\leq 0,26$. All criteria met in two successive visits	No haematuria AND a variation of creatinine $\leq +25\%$ of creatinine based on reference value for age AND Proteinuria (mg/mg) $\leq 0,20$	No haematuria AND a variation of creatinine $\leq +15\%$ of creatinine based on reference value for age AND Proteinuria (mg/mg) $\leq 0,50$	No haematuria AND GFR $\geq 90\text{ml/min}/1.73\text{m}^2$ AND Proteinuria (mg/mg) $\leq 0,50$	A variation of creatinine $\leq +25\%$ of creatinine based on reference value for age OR GFR $\geq 90\text{ml/min}/1.73\text{m}^2$ AND Proteinuria (mg/mg) $\leq 0,50$	GFR $\geq 90\text{ml/min}/1.73\text{m}^2$ AND Proteinuria (mg/mg) $\leq 0,50$
Patients in stable remission (18 months)	12/248 (4,8%)	16/248 (6,5%)	19/248 (7,7%)	17/248 (6,9%)	40/248 (16,1%)	28/248 (11,3%)