

***In vitro* sensitivity to methyl-prednisolone for predicting clinical response in pediatric idiopathic nephrotic syndrome**

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The response to glucocorticoid (GC) treatment is an important indicator of the outcome of idiopathic nephrotic syndrome (INS) as patients with poor response have unfavorable prognosis. The inhibition of proliferation of peripheral blood mononuclear cells (PBMC) by GCs has been correlated with clinical response in various diseases. The aim of this study was to evaluate the *in vitro* anti proliferative activity of GCs as predictor of steroid response in pediatric INS children.

As part of a prospective multicenter study of steroid treatment at onset of pediatric INS, the *in vitro* inhibition of PBMC proliferation by [methyl-³H]-thymidine incorporation was evaluated before (T0) and after 4 weeks (T4) of steroid treatment in 74 patients (median age 4.33, IQR 2.82-7.23; 63.5% male). The drug concentration that induced 50% of growth inhibition (IC₅₀) and the maximum inhibition achievable at the highest drug concentration (I_{max}) were determined. Receiver operating characteristics (ROC) curves identified optimal cut-off points to predict clinical response. Children were treated with a shared protocol as regards steroid and symptomatic treatment of the INS.

At T0, univariate analysis showed an association between GC-resistance and reduced *in vitro* methyl-prednisolone response evaluated as I_{max} (OR=1.07, 95% CI=1.00-1.15; p-value= 0.046). At T4, a significant association between clinical dependence to GCs and increased *in vitro* response was observed both for I_{max} (OR=1.13, 95% CI=1.02-1.31; p-value=0.017) and IC₅₀ (OR=0.48, 95% CI=0.24-0.85; p-value=0.0094). Optimal predictor of clinical dependence evaluated by ROC curves, was I_{max} at T4 ≥ 92%. Moreover an association between age at the onset of the disease and I_{max} (p-value=0.043, r=-0.25) and clinical response (OR = 0.81, 95% CI=0.67-0.98; p-value=0.028) was found.

These results suggest that the *in vitro* proliferation test may be useful in the prediction of response to GCs in pediatric patients with INS