Optimization of biologic therapy in children with inflammatory bowel disease (IBD) using modern biomarkers

Abstract to thesis

Study programme: Biochemistry and Pathobiochemistry

Introduction: In adults, infliximab (IFX) levels correlate with disease activity and antibodies to IFX (ATIs) predict treatment failure. We aimed to determine the association of IFX levels and ATIs with disease activity in paediatric population.

Methods: This study was performed as a prospective observational study. We prospectively collected blood, stool, and clinical data from 65 patients (age 10.5-15.1 years) with Crohn's disease (CD) before IFX administration, and measured IFX trough levels, ATIs, and faecal calprotectin levels (CPT). We used multivariate analysis to identify the predictors of IFX levels. IFX and ATIs levels were meassured using ELISA.

Results: Lower levels of IFX were associated with ATIs positivity (OR [odds ratio] 0.027, CI [confidence interval] 0.009–0.077). Higher C-reactive protein (CRP) level, erythrocyte sedimentation rate (ESR) and CPT levels were found in patients with lower IFX levels. The optimal combination of specificity (50%) and sensitivity (74%) for disease activity was calculated for IFX levels ≥ 1.1 μg/ml using CRP level < 5 mg/l as a marker of laboratory remission. In a model that used CPT ≤ 100 μg/g as the definition of remission, the optimal IFX trough level was 3.5 μg/ml. No independent association between remission and ATIs was found in our study population. However, we found an independent association between IFX levels and serum albumin levels (OR 1.364, CI 1.169–1.593), $p < 0.001$.

Conlusions: The paediatric population is similar to adult population in terms of the association between IFX and ATIs as well as between IFX and disease activity. IFX level 1,1 μg/ml was determined to be optimal cut-off value for disease activity defined by CRP.

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Praha 2020

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