

Risk factors of manifestation and course of treatment of inflammatory bowel disease in children

Typical Crohn's disease (CD), Crohn's colitis, typical and atypical ulcerative colitis (UC) are currently perceived as different forms of inflammatory bowel disease (IBD). The incidence of IBD is increasing worldwide in both the adult and paediatric populations. Although the role of genetic background and environmental factors in the development of these diseases is known to some extent, the exact cause of IBD has still not been determined. Comprehensive care requires a precise and data-driven approach to minimize the risk of complicated disease course and the development of disease-related and/or treatment-associated complications.

The main goal of this work is to identify new predictive factors affecting individual areas of care of paediatric patients with IBD. The range of clinical situations addressed in this work includes the possibility of predicting the diagnosis, the generally complicated disease course, the response to a particular therapeutic regimen, the development of side effects associated with the therapeutic procedure and the patient's adherence to the treatment. Part of the original works was done in a retrospective design, part as prospective observational studies and two of the original works were realized as multicentre international projects.

The most important outcome of the work can be considered the creation of a predictive model of estimation of individual time to relapse in paediatric patients with CD on thiopurine treatment. We also developed models predicting the level of azathioprine metabolites, which reflect the suitability of the drug dosage or the patient's adherence to its use. An optimal cut-off of the level of azathioprine metabolites, which predicts the achievement of the effective infliximab levels, has been found. We identified infliximab, compared to adalimumab, as a predictor of the development of skin side effects in paediatric IBD patients. We have shown that the tissue expression level of CD30+ cells is a strong predictive factor of classifying the disease into one of the IBD types. In contrast, the possibility of clinical usefulness has not been demonstrated in the determination of tissue calprotectin (CPT) levels and faecal CPT levels obtained early after initiation of treatment with exclusive enteral nutrition. We indicated the limited clinical use of home tests to determine faecal CPT levels.

The results of individual studies can be summarized as the acquisition of a set of new information, on the basis of which it is possible to predict a certain phenomenon, the early influence or prevention of which, contributes to better disease control. Thanks to the newly identified possibilities of predicting specific clinical questions, the answer to them is more informed and it is possible to assume greater accuracy in decision-making process.