Abstract

Inflammatory bowel diseases (IBD) are an autoimmune illnesses affecting gastrointestinal tract. The main types include ulcerative colitis and Crohn's disease. Recently, primary sclerosing cholangitis (PSC) has also been associated with IBD. PSC is a chronic liver disease associated with bile duct stenosis. The exact pathogenesis and etiology of these diseases is not clear, despite the great efforts of the scientific community. They are multifactorial diseases that are associated with dysbiosis of intestinal microbiota. Their diagnosis is based on for patients unpleasant endoscopic examinations and therefore the search for new serum biomarkers is needed and appreciated target of scientific interest.

In the first part of diploma thesis, we focused on the reactivity of peripheral blood cells of IBD patients to 10 selected representatives of typical intestinal microbiota: *Lactobacillus plantarum, Bifidobacterium adolescentis, Blautia coccoides, Roseburia intestinalis, Eubacterium rectale, Faecalibacterium prausnitzii, Ruminococcus flavefaciens, Bacteroides thetaiotaomicron, Prevotella ruminicola* and *Escherichia coli*. Reactivity of CD, UC and PSC-IBD patients was increased after stimulation with *Faecalibacterium, Lactobacillus* and *Prevotella*. However, we got low percentage of cytokine-producing cells, so we cannot confirm whether they could be involved in pathogenesis or not.

Next part of the work was testing of selected biomarkers using patients' sera. Fatty acid binding proteins such as intestinal I-FABP and liver L-FABP have shown intestinal barrier damage. Increased matrix metaloproteinases MMP-14 concentration and decreased MMP-9 clearly determined IBD patients from healthy controls. A lipopolysaccharide-binding protein LBP whose values were higher for CD could help to distinguish UC and CD.

Our results indicate reactivity to commensal bacteria and the importance of the intestinal barrier in IBD. Non-invasive diagnostics has many benefits not only for patients but also economically and for the possibility of retesting in a short period of time.

Key words: IBD, ulcerative colitis, Crohn´s disease, gut microbiota, peripheral blood, biomarkers