Abstract

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Title of rigorous thesis: The systemic inflammatory response of the organism to *Clostridium difficile* infection

Clostridium difficile is currently considered to be the major etiological agent of healthcare-associated diarrhoea in the developed countries. CDI (*Clostridium difficile* infection) is a potentially life threatening disease of increasing incidence. Despite worldwide research of new highly potent drugs, CDI treatment remains a major problem with regard to the high probability of recurrence and treatment resistance. The aim of this thesis is to find out the number of patients with CDI in a given time period and how CDI affects the C-reactive protein (CRP), leukocyte and neutrophil levels. Rapid membrane enzyme immunoassay for the simultaneous detection of *C. difficile* glutamate dehydrogenase (GHD) antigen and toxins A and B in a single reaction was used. The RT-PCR method was applied to confirm where a positive result for antigen but negative for toxin appeared. The biochemical determination of CRP was performed turbidimetrically. Complete blood count including a differential count was performed using electrical impedance principal and fluorescence flow cytometry *C. difficile* as the infectious agent in the patients group was detected. The most important risk factor for CDI was intestinal dismicrobism caused by previous antibiotic treatment. The development of colitis was associated with the administration of various antibiotics, most often aminopenicillins, cephalosporins, lincosamides and fluoroquinolones. The findings confirm that CDI significantly increases CRP, leukocyte and neutrophil levels indicating the presence of inflammatory response in the body.

Key words: *Clostridium difficile*, leukocytes, neutrophils, CRP, antibiotics, colitis