

Abstract:

In the last two decades there is an enormous effort to discover a non-invasive marker to diagnose, predict and monitor therapy effect of malignant diseases. Circulating tumor cells (CTC) have the ability to fulfil all these criteria. The introduction of the monothematic thesis deals with the problematics of CTC in general and its application in clinical medicine. It is followed by the author's first publication, which reviews the current status of CTC in gynecological malignancies. The next publication is an original article about CTC in patients with endometrial carcinoma. It reports a successful isolation of vital CTC in 75% of tested patients and identifies CTC as an individual marker of the disease without correlation to the stage, grade or lymph nodes involvement.

The second part of this thesis deals with endometriosis, a benign but often recurrent disease worsening the life quality of women in reproductive age. The multicentre study presents a successful isolation of circulating endometrial cells (CEC) in patients with histologically proven endometriosis with various stages and symptoms. From the total of 423 samples 78.4% were CEC positive. Eleven patients were monitored during their menstrual cycle and CEC tested in different phases, being the early post-ovulatory period in which the highest CEC number was detected. Cytomorphologic and later molecular analysis showed characteristic cell types and genes for different phases, which could lead to better understanding of endometriosis dynamics. The last original article of this thesis is a proof-of-concept study which demonstrates successful isolation and characterization of CEC in patients with spontaneous pneumothorax with very suspect catamenial involvement. In all the 20 patients CEC were detected and with further molecular analysis divided in to two groups. The gene expression profile of the two groups corresponded with the intraoperative findings, which would explain the two pathophysiological routes of endometriosis spread to the thoracic cavity (diaphragm fenestration vs. hematogenous spread). The clinical value of this original study would be the early diagnostics of endometriosis etiology, more effective therapy management and a follow up by the gynaecologist to lower the risk of recurrence.