This PhD. thesis deals with four different topics for which an increased risk of the development of colorectal cancer (CRC) is the common denominator. The first part is aimed to Cowden syndrome (CS), the second to Peutz-Jeghers syndrome (PJS), the third to sporadic CRCs in Czech population and the fourth is dedicated to a patient with a constitutional mismatch repair deficiency syndrome (CMMR-D) and a particular mutational profile.
Cowden syndrome (CS) is an autosomal dominant disorder with a predisposition to tumours, especially breast, thyroid and uterine tumours. Pathognomonic features are mucocutaneous lesions with almost a 100% penetrance until 30 years of age (1). Despite the established diagnostic criteria (2), classification of the CS is a challenge due to extremely variable phenotypic spectra and a variable expression of the disease. Molecular-genetic analysis of the causal PTEN gene may confirm or exclude the suspicion of the CS (3). We have analysed and described two patients (Publication 1 and 2) who presented with variable expression of the disease. First one manifested with massive polyposis of the gastrointestinal tract (GIT) and the other patient developed the malignant disease.
Peutz-Jeghers syndrome (PJS) is an autosomal dominant disorder characterised by the presence of mucocutaneous pigmentation and gastrointestinal hamartomatous polyps (10). Germline mutations of the PTEN gene are responsible for the development of the disease (5). PJS patients are at an increased risk of the development of different neoplasms, especially GIT tumours (6). We have analysed patients suspected of having PJS and found the germline mutations not only in patients fulfilling PJS criteria but also in one sporadic patient, not complying the criteria. We have also described a patient with an aggressive gastric cancer and a frameshift mutation in the STK11 gene.