Abstract

Breast cancer is the most common cancer among women in the Czech Republic. Mutations in two major predisposition genes, *BRCA1* and *BRCA2*, account only for 16 % of familial risk of breast cancer. Gene *PALB2* was discovered in 2006 as a tumor suppressor. Protein product of PALB2 plays a major role in pathway of DNA repair of double-strand breaks through the homologous recombination mechanism. PALB2 links BRCA1, BRCA2 and RAD51 and is required for their recruitment to DNA damage foci and initiate homologous recombination. In a response of DNA damage *PALB2* participates on regulation of the cell cycle. Protein function of PALB2 is necessary to maintain the integrity of the genome and in case of loss this function, because of the gene inactivation, it leads to genomic instability, which may be the basis for the development of tumorogenesis. Heterozygous mutations in PALB2 increase the risk of breast cancer predisposition, these mutations has been demonstrated even in pancreatic cancer and less often in ovarian cancer. Therefore, it is important to analyze truncating mutations in the *PALB2* gene in *BRCA1/2*-negative patients from families with a strong history of hereditary breast cancer. The frequency of PALB2 mutations may be comparable to the frequency of mutations in the *BRCA2* gene in Czech hereditary breast cancer families.