Abstract:
Cytogenetic abnormalities are characteristic attribute of cancer cells. To date, clonal chromosomal aberrations have been found in majority of tumors and they represent important part of management of patients with malignant diseases. Using modern molecular cytogenetic methods (I-FISH, mFISH, mBAND, CGH, aCGH, SNP array) we performed precise analysis of complex chromosomal rearrangements (CCR) in patients with various hematological malignancies and difuse gliomas. We described particular aberrations in detail and found chromosomes and chromosomal parts which were involved in CCR most frequently. We determined recurrent chromosomal breakpoints and pointed out to regions with important role in initiation and progression of the disease. From the clinical point of view, we proved that complex chromosomal aberrations found at the time of diagnosis are poor prognostic factor. In our cohorts of patients, complex chromosomal rearrangements were associated with resistance to treatment, higher occurrence of relapses and shorter overall survival. Results of our study proved significance of molecular cytogenetic analysis not only for diagnosis and prognosis of patients with different types of tumors but also for clarification of mechanisms leading to malignant transformation of the cell. Detailed chromosomal analyses of tumor cells have fundamental role in identification of genes and novel pathogenetic mechanisms which can serve as targets for development of new therapeutic interventions.