

# THE IDENTIFICATION OF MUTATIONS IN THE GENES BRCA1 (185DEL $\Delta$ G) AND BRCA2 (6174DEL $\Delta$ T) ON THE DEVELOPMENT OF PANCREATIC CANCER

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V. Drobysheva, E. Spadaruk, R. Smolyakova

*Belarusian State University, ISEI BSU,  
Minsk, Republic of Belarus  
Mikaku.kuroko@gmail.com*

In the course of work, a study was conducted in the presence of mutations in the genes BRCA1(185delAG), BRCA2(6174delT) in patients suffering from pancreatic cancer.

**Keywords:** pancreatic cancer, mutation, expression, heterozygotes, BRCA1, BRCA2.

According to the WHO 2012 pancreatic cancer is the 10th highest incidence and the 4th place in the 5-year survival rate in the world [1]. In Belarus died more than 700 people in 2010, and according to the 2012 – 809 [2]. Diagnosis of pancreatic cancer is difficult operation. The disease has no specific symptoms in the early stages. Patients seek treatment at stage 3 or 4 when the tumor is large or metastatic. On the development of this disease affected gene mutations: BRCA1 (a factor of the development hereditary forms of pancreatic cancer, is involved in DNA repair); BRCA2 (increase to develop tumor at earlier age, is involved in maintaining genetic stability of an organism) [3].

**Materials and methods.** Molecular genetic identification of mutations in the genes BRCA1,2 was carried out using reagents PRONTO (Israel) by PCR (BstNI (REMS-PCR)) and ELISA (Assay Solution). The study includes the following steps: 1) DNA extraction ((QJamp DNA Blood Mini Kit Qiagen (Germany))); 2) amplification; 3) postunification; 4) amplification with primers; 5) enzyme-linked immunosorbent assay.

**Results.** During the work were studied the clinical data of 19 patients suffering from pancreatic cancer and were treated at the State institution “Republican scientific and practical center of Oncology and medical radiology N. N. Alexandrov”. Among patients revealed that cancer of the pancreatic head is found in 73,68 % in the body is 15,79 % and the tail is of 10,53 %. The average age of patients with cancer of the pancreas –  $59 \pm 3,12$  years.

During the work was the molecular-genetic study of patients with pancreatic cancer the presence of mutations in a heterozygotes (185delAG, and 6174delT) genes BRCA1,2. The analysis of the obtained data, it was found that 10 % of patients have a mutation in the gene BRCA1 (185delAG) in heterozygotes. And 5 % of the patients were identified mutation in the BRCA2 gene (6174delT). The age of patients with a mutation in the BRCA1 gene is  $56 \pm 10,99$  years and, in BRCA2 – 43. The average age of patients without mutations  $60,38 \pm 3,403$  years. The prevalence of the disease: stage 1A – 5,26 %; stage 2A – 31,58 %; 2B, stage – 31,58 %; stage 3 – 5,26 %; stage 4 is 15,79 %; 10,52 % of indefinable.

Thus, based on these data, it was found that all patients with detection of mutations in the genes BRCA1,2, the disease was at stage 2B. This indicates the presence of metastases in regional lymph nodes. Based on the data, it can be assumed that the mutation in the BRCA2 gene is a risk of developing pancreatic cancer at an early age. To establish the effect of mutations in the BRCA1 gene failed due to the small difference in age between the patients diagnosed with the mutation and without it.

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