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Conjugacy cancer risk lung localization of tectonic faults, reinforcing radon emanation

In many countries, radon is the second leading cause of lung cancer, which accounts for 3% to 14% of cases. It is obvious that the population of all the developed and industrial countries in the world most of the time, almost 80% is carried out indoors, and therefore need to be able to control and, of course, explore the resulting radiation dose, due to the presence of radon in the room due to the emanation of radon from the soil and radon exhalation from a variety of materials. Developed countries legally solve the problem of pollution of radon, as well as create a special monitoring service.

The paper presents the data of molecular-genetic analysis of 8 genes in patients with lung cancer who live in Almaty is located in foothill area with the presence of tectonic faults. This proto-oncogenes, which participate in the transduction of the cell cycle.

The object of the study, blood samples were obtained from patients diagnosed with lung cancer who are receiving treatment at the Almaty Oncology Center and living in the city of Almaty, where the level of radon activity exceeds the norm approved by the International Commission on Radiation Safety. As a control group were considered conditionally healthy people living in the plains, characterized by lower radon emanation. Genomic DNA from peripheral blood lymphocytes was isolated using a set *GeneJet Genomic DNA Purification Kit (Thermo scientific, USA)* according to the protocol. To determine the mutations in the genes was performed by polymerase chain reaction (PCR) with subsequent analysis of restriction fragment length polymorphism (RFLP). The PCR products were subjected to hydrolysis and BstNI restriction endonucleases HaeIII, Ras I. Restriction products were detected by electrophoresis in 15% PAGE.

Disturbances in the studied genes lead to the development of many types of cancer. The analysis showed that the examinees do not have mutations in the *KRAS* gene codons 12-13, which corresponds to a control group consisting of 90 people, which were considered as conditionally healthy people living in the city of Balkhash.

In general, molecular genetic studies have shown that 43 examined patients have mutations in the *KRAS* gene, one mutation was found in the *EGFR* gene. Perhaps this is due to the specifics of the Kazakh population, which earlier this direction has not been studied.

Key words: lung cancer, radon, mutation, RFLP.