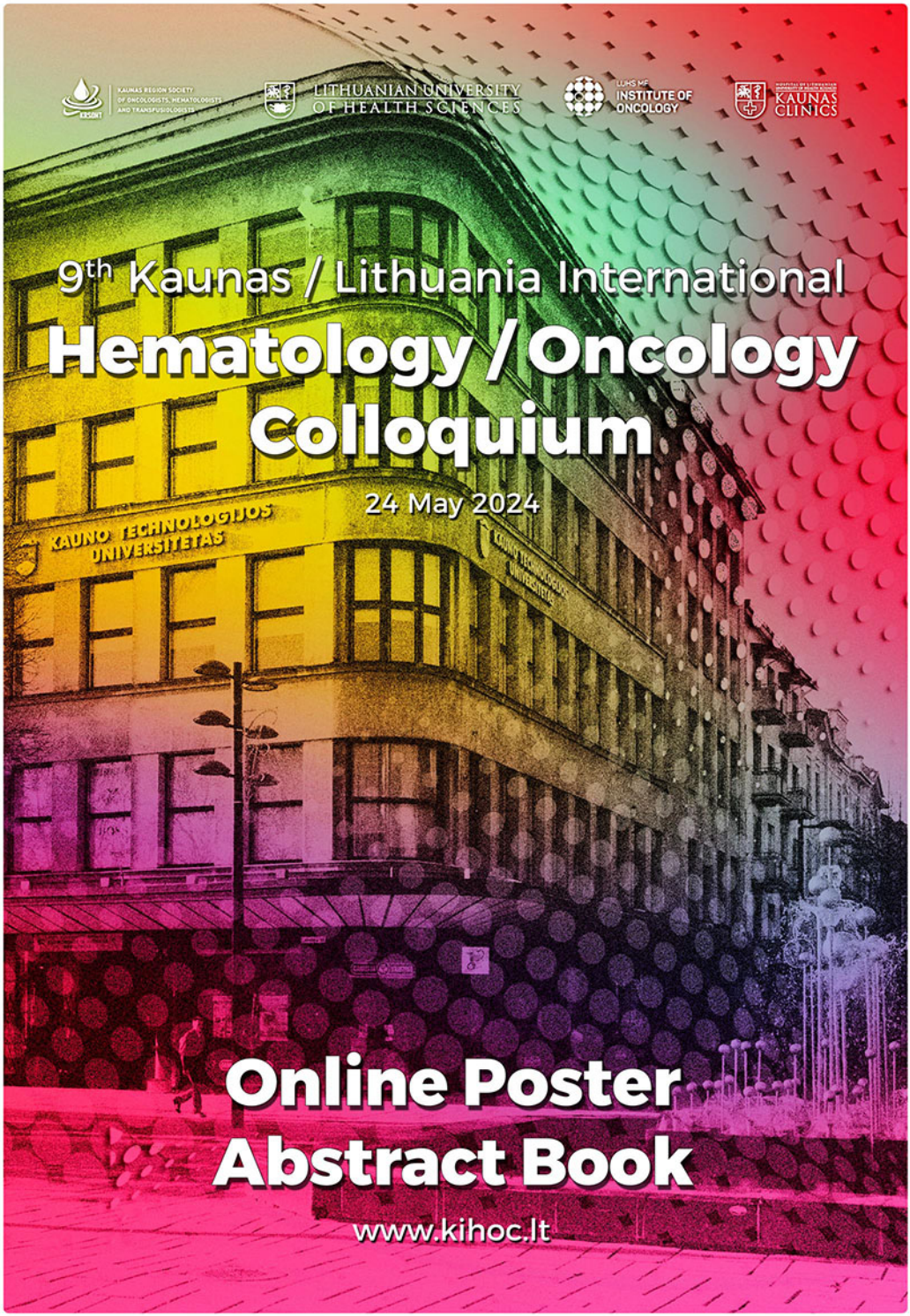
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# 9th Kaunas / Lithuania International Hematology / Oncology Colloquium

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including 30, 40, 50 and 80 μM (after 48 and 72 incubation times). Further the radiosensitizing effect of LUT was evaluated. The combination of LUT and radiation (LUT+IR) treatment produced significantly greater antiproliferative effect on the breast cancer cells than either of these treatments alone. To investigate whether the LUT-induced inhibition of MCF-7 cell line growth was due to cell apoptosis, MCF-7 cells were stained with annexin V. Our results suggest that the percentage of cells undergoing apoptosis grown with increased LUT concentrations. However, no difference was found between doses of ionizing radiation. Quantitative RT-PCR analysis showed that the combination of LUT (40 μM) and IR (4 Gy) treatment significantly reduced BCL-2 gene expression than either of these treatments alone.

Conclusions and Recommendations

Our study results revealed that luteolin can significantly induce cytotoxicity in breast cancer cells via the induction of apoptosis. We also demonstrated that the inhibitory effect of combination of LUT+IR cell growth was related to the expression reduction of anti-apoptotic gene BCL-2. Collectively, these findings indicate that luteolin acts as a potential radiosensitizer of MCF-7 breast cancer cells.

**10. Lung Function in Pediatric Acute Leukemia Patients: Diagnostic and Prognostic Issues**

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Background and Objectives

While there have been notable advancements in the treatment of acute leukemia (AL), the occurrence of various complications substantially affects the prognosis for children with this condition. Lung function assessment and proper management of pulmonary complications in children with AL are crucial for enhancing their prognosis and quality of life. The objectives of the study included assessment of lung function in pediatric AL patients at different periods and determination of tolerance to physical activity in AL survivors.

Material and Methods

The study was conducted at hematological department CNE “Clinical Children's Hospital № 16" of Kharkiv City Council. To lung function spirometry was conducted in 46 children aged 6-17 years with AL (40 with acute lymphoblastic and 6 with myeloid leukemia) at the beginning of chemotherapy protocols (group 1) and AL survivors with completion of chemotherapy and remission for at least 2 years (group 2). In AL survivors and the absence of respiratory complaints a test with physical

activity was performed (group 2A). Spirometry was conducted with the help of the spinographic complex "SpiroCom", "KHAI-Medyka", Kharkiv, Ukraine. STATISTICA 8 (Tulsa, OK) and MedCalc 17.2 were used for statistical data analyses.

Results

All Medians of lung function parameters corresponded to normative values. In children of group 1 obstructive disorders were detected in 6/21 children (28.6%) and restrictive disorders detected in 2/21 children (9.5%). In children of group 2 obstructive disorders were detected in 3/25 (12.0%) children and restrictive disorders were found in 3/25 (12.0%) children. Also, borderline values of at least one parameter of lung function were found in 33.3% of patients in group 1 and in 20.0% of children in group 2, which indicates a decrease in the functional capabilities of the respiratory system in comparison to general pediatric population. Among children of group 1 and the presence of obstructive changes in lung function, clinical manifestations of wheezing developed in 4/6 children (66.7%) during treatment protocols. None of children of group 1 and presence of restrictive disorders had clinical manifestation or changes on X-ray or CT scan. These restrictive changes are likely transient. They remind in-depth study. The study detected that a decline in MEF75 below 76.4% in children of group 1 significantly escalates the susceptibility to wheezing development by 12.5 times (RR 12.5 (95CI% 1.8-85.9)). All patients of group 2 with obstructive changes in lung function had wheezing or asthma. All children of group 2 in the presence of restrictive changes on spirometry had lung fibrosis, confirmed by a CT scan. In AL survivors, the following spinographic parameters decreased statistically significantly after the physical activity test: FVC p2-2A <0,001, PEF p2-2A <0,001, MEF25 p2-2A <0,001, MEF50 - p2-2A<0,001, MEF75 p2-2A= 0,036258. That indicates decreased tolerance to physical activity in AL survivors.

Conclusions and Recommendations

Despite the normal values of Medians of lung function parameters in children at the beginning of treatment obstructive disorders were detected in 28.6% of children and restrictive disorders were detected in 9.5% of children. In AL survivors obstructive disorders were detected in 12.0% of children and restrictive disorders were found in 12.0% of children. A decrease in tolerance to physical activity in AL survivors was detected. The study confirmed diagnostic and prognostic value of spirometry in pediatric AL patients. A decrease in MEF75<76.4% at the beginning of chemotherapy increases the risk of developing wheezing in children by 12.5 times during the treatment of AL (RR 12.5 (95CI% 1.8-85.9)). AL survivors in the presence of restrictive changes on spirometry revealed the formation of lung fibrosis, in the presence of obstructive changes there were signs of asthma formation. Therefore, spirometry is a proper

instrument for lung function monitoring and management of pulmonary complications in pediatric AL patients.

**11. The Analysis of Polymorphisms in DNMT3B Gene and Estimation of Their Effect on Tumor Phenotype and Prognosis on Breast Cancer Patients**

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Background and Objectives

Breast cancer is the most common oncological disease in women worldwide. The studies show that DNA methylation plays a critical role in breast cancer development and proliferation. DNMT3B, one of the enzymes involved in the methylation process, is implicated in the onset of breast cancer and is thought to be a particularly relevant molecular marker in this condition. Their role is related to the methylation of tumor suppressor genes or DNA repair genes, and their abnormal expression contributes to oncogenic processes and tumorigenesis. It is well known that polymorphisms of the DNMT3B gene may influence DNTM3B activity on DNR methylation, thereby modulating susceptibility to breast cancer. Taking into consideration a large quantity of SNPs in the DNTM3B gene that are insufficiently investigated, our study examines the SNP variants rs6058885 and rs6058896. The purpose of our research was to identify genotypes and alleles associated with DMNT3B polymorphism. Our research included the determination of any potential association between rs6058896 or rs6058885 and tumor pathomorphological features and survival of breast cancer.

Material and Methods

A total of 171 patients were enrolled in this study according to strict inclusion criteria such as confirmed diagnosis, full medical documentation, and the absence of other comorbidities. Blood samples from the breast cancer patients were collected between 2010 and 2017 at LUHS the Institute of Oncology. Genomic DNA extraction from the samples was done using the "Gene JET Genomic DNA Purification kit" according to the manufacturer’s instructions. Next, we conducted genotyping of DNMT3B rs6058896 and rs6058885 polymorphisms by RT-PCR using "TaqMan SNP Genotyping Assays". Statistical analysis was done by Statistical Package "IBM SPSS Statistics 29.0.0.0". The research protocol was approved by Kaunas Biomedical Research Ethical Committee (protocols No. BE-2-10 and No. P1-BE-2-10/2014).