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PROGNOSTIC POTENTIAL OF LEUKOCYTE TELOMERE LENGTH AND PARAOXONASE 1 ACTIVITY IN SMALL CELL LUNG CANCER

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Small cell lung cancer (SCLC) is the leading cause of cancer-related deaths worldwide and is characterized by rapid growth, early metastasis, and high mortality rates. This study investigated the prognostic potential of leukocyte telomere length (LTL) and paraoxonase 1 (PON1) activity in 60 SCLC patients treated with a cisplatin/etoposide (PE) regimen. Patients were observed at baseline, after 2 cycles, and after 4 cycles of chemotherapy. The primary objective was to evaluate the prognostic potential of these biomarkers for patient survival. LTL was measured from isolated genomic DNA using real-time quantitative polymerase chain reaction (RTq-PCR), while PON1 activity was determined using a spectrophotometric method. A Kaplan-Meier survival analysis was performed with cut-off values below the 25th percentile for LTL and PON1 activity to determine their prognostic power for overall survival. The analysis revealed that both LTL and PON1 are significant predictors of patient survival, suggesting that patients with levels below the 25th percentile have a higher risk of death (Log Rank = 3.956, p = 0.047; Log Rank = 3.834, p = 0.050, respectively). Telomeres, the protective caps at the ends of chromosomes, shorten with each cell division and reflect cell aging and genomic stability. Shorter telomere lengths in leukocytes have been associated with a poorer prognosis and lower survival rates in SCLC patients. Similarly, reduced PON1 activity is associated with increased oxidative stress, which contributes to cancer progression and poorer clinical outcomes. Monitoring PON1 activity could help in assessing patient prognosis and adjusting treatment strategies. These findings suggest that LTL and PON1 activity have significant prognostic value in SCLC and serve as useful indicators for identifying high-risk patients and guiding treatment decisions to improve outcomes.