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The Cancer Control Challenge:
Better Understanding It to Better Face It

BCR-ABL TRANSCRIPTS IN CML CASES IN THE AMAZON: FREQUENCY AND RELATION WITH LEUKOCYTE AND PLATELET COUNTS

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Introduction: Chronic Myeloid Leukemia (CML) is a myeloproliferative neoplasm characterized by the proliferation of progenitor cells of the myeloid lineage, increasing the circulating cells of the granulocytic lineage. The annual incidence of CML is 1 to 2 cases per 100,000 individuals, representing about 15% to 20% of leukemias. The Northern region of Brazil has the lowest percentage of hospitalizations due to leukemia (6.3% of the national total), which may indicate challenges in access to diagnosis and treatment. **Objectives:** To analyze the status of the BCR-ABL gene transcript in CML cases in patients from the Brazilian Amazon in relation to frequency and association with known prognostic laboratory data. **Methods:** The research included a total of 162 patients detectable for one of the BCR-ABL gene transcripts between January 2015 and December 2024. Laboratory data on leukocyte count, platelet count, sex and age were collected from the HEMOPA Foundation database system. For the analysis of fusion transcripts, c-DNA was obtained for the detection of the presence of molecular biomarkers by Real-Time PCR (RT-qPCR) using specific Taqman probes on the Rotor Gene equipment. For qualitative variables, descriptive statistics were used, determining absolute and percentage frequencies. For quantitative variables, mean and median values, standard deviation, and maximum and minimum values were calculated according to the variables under study. The Kruskal-Wallis test was performed to test the association of the presence of one of the BCR-ABL gene transcripts (B2A2, B3A2, and/or B2A2/B3A2) with laboratory data, adopting a p-value ≤ 0.05 as significant. Statistical analyses were performed using SPSS 29.0 software. The study presents CEP-CAEE 20528519.8.0000.5550. **Results:** Regarding the BCR-ABL gene, 39.5% (64/162) presented the B2A2 transcript, 27.8% (45/162) presented B3A2, and 32.7% (53/162) presented B2A2/B3A2. As for sex, 59.3% (96/162) were male and 40.7% (66/162) were female, and the median age of the patients was 45.5 years. Regarding leukocyte count,

patients had a median of 143,500/mm³; as for platelet count, the median was 388,500/mm³. The Kruskal-Wallis test revealed that there is no statistical difference between the types of BCR-ABL gene fusion transcript and the laboratory data on leukocyte and platelet counts. **Conclusion:** The B2A2 transcript was observed as the most prevalent among CML patients, and patients with this type of transcript had a higher median leukocyte count compared to other groups. Patients with the B3A2 transcript had a higher median platelet count compared to others; however, in both analyses, no significant difference was found between the groups. The transcript has an impact on the disease development process, potentially leading the patient to produce many cells; therefore, it is worthwhile to study the BCR-ABL gene pathways and find new treatment strategies.

Keywords: Chronic myeloid leukemia; BCR-ABL.