imunomoduladoras do ART. **Conclusão:** Este estudo demonstra pela primeira vez os efeitos in vivo do ART em um modelo murino de SMD, evidenciando uma modulação imunológica significativa na medula óssea com redução de células imunossupressoras e aumento de células NK, além da diminuição da hematopoiese extramedular. Esses resultados reforçam o potencial terapêutico do ART para SMD.

https://doi.org/10.1016/j.htct.2024.09.747

MOLECULAR CYTOGENETIC CHARACTERIZATION OF DER(7)T(1;7) IN MYELODYSPLASTIC SYNDROME: CLINICAL IMPLICATIONS

GF Lima, BF Silva, IC Gonçalves, L Otero, MM Rocha, VL Lovatel, TS Fernandez

Cytogenetic Laboratory, Instituto Nacional de Câncer (INCA), Rio de Janeiro, Brazil

Introduction: Myelodysplastic syndrome (MDS) represents a heterogeneous group of hematologic malignancies characterized by ineffective hematopoiesis, resulting in cytopenias and a high risk of progression to acute myeloid leukemia (AML). Approximately 50% of patients with MDS have chromosomal abnormalities, which are a prognostic marker. The most common chromosomal abnormalities in MDS include deletion of the long arm of chromosome 5 [del(5q)], alterations in chromosome 7 (deletion of the long arm of chromosome 7 [del (7q)]/monosomy 7), and trisomy 8. Alterations in chromosome 7 are associated with an unfavorable prognosis. The chromosomal abnormalities [-7/del(7q)] affect genes critical for cellular regulation, leading to dysfunctions in the development and maturation of blood cells. The unbalanced translocations der(7)t(1;7) has been considered by some studies as a variant of chromosome 7 alterations, presenting a prognosis similar to these alterations. However, according to the Revised International Prognostic Scoring System (IPSS-R), the der(7)t(1;7) presents an intermediate prognosis. **Objective:** To report cases of patients with MDS who presented the unbalanced translocations der(7)t(1;7) and their clinical outcomes. **Materials and methods:** This study included 4 patients of a total of 460 adult patients with MDS, between 2000-2023. Cytogenetic analyses were performed on bone marrow cells by G-banding and fluorescence in situ hybridization (FISH). **Results:** Chromosomal abnormalities were observed in 41% (190/460) of the patients. Of these patients, four had unbalanced translocations involving chromosomes 1 and 7. The patients were classified in advanced subtypes (MDS-AB1/AB2) and progressed to AML. Of these patients, three had der(7)t (1;7)(q10;q10) and one patient had a different breakpoint region [46,XY,der(7)t(1;7)(q21;q31)]. Not previously reported in the literature. **Discussion:** Although uncommon, unbalanced translocation involving the der(7)t(1;7)(q10;q10) breakpoints has been previously reported in approximately 0.6% to 2.6% of MDS cases. Some studies suggest that der(7)t(q10;p10) is associated with a more favorable prognosis compared with -7/del (7q), while others have not observed significant differences in prognosis between these cytogenetic alterations. In our study, we observed that these chromosomal translocations were associated with advanced disease subtypes and progression to AML. **Conclusion:** Our study suggests that der(7)t(1;7) is associated with an unfavorable clinical outcome in adult patients with MDS. **Support:** Ministério da Saúde – INCA.

https://doi.org/10.1016/j.htct.2024.09.748

ASSOCIATION BETWEEN EZH2 EXPRESSION PATTERN WITH KARYOTYPE AND EVOLUTION FROM MYELODYSPLASTIC NEOPLASM TO ACUTE MYELOID LEUKEMIA

IC Gonçalves, GF Lima, BF Silva, VL Lovatel, TS Fernandez

Cytogenetic Laboratory, Instituto Nacional de Câncer (INCA), Rio de Janeiro, Brazil

Introduction: Myelodysplastic Neoplasm (MDS) is a heterogeneous group of clonal hematopoietic stem cell diseases. MDS is characterized by the presence of bone marrow (BM) dysplasias, peripheral blood cytopenias and is frequently associated with progression to Acute Myeloid Leukemia (AML). MDS represents an ideal model to study the steps involved in leukemogenesis. Recent advances at the molecular level have provided new insights into the development of MDS and its progression to AML. The *Enhancer of Zeste Homolog 2* (*EZH2*) is a histone methyltransferase. It is the catalytic subunit of PCR2 for tri-methylation of histone 3 at lysine 27 (H3K27me) by SET domain in its C-terminus, which silences target genes involved in various biological functions as cell cycle, cell proliferation and differentiation. PcG proteins are important epigenetic regulators and critical factors of pluripotency and differentiation of stem cells as well as aberrant gene expression during the malignant transformation. Few studies have investigated the expression of *EZH2* in MDS and the results are controversial. **Objective:** To analyze the expression pattern of the *EZH2* gene in adult patients with MDS and its association with karyotype and progression to AML. **Materials and methods:** This study included 70 adult patients with MDS and 20 adult donors of bone marrow for hematopoietic stem cell transplantation (HSCT). Cytogenetic analyses were performed by G-banding and fluorescence in situ hybridization (FISH). Analysis of the expression pattern of the *EZH2* gene was performed by real-time PCR. **Results:** Analysis of the relative expression levels of the EZH2 gene showed that patients had a higher expression when compared to controls ($p < 0.0005$). Abnormal karyotypes were observed in 49% of the cases analyzed (34/70). The association of relative expression levels of EZH2 between patients with normal karyotypes and abnormal karyotypes showed a higher relative expression. of *EZH2* in patients with abnormal karyotypes ($p < 0.002$). Disease progression was observed in 44% of the patients (31/70). The patients who had leukemic evolution presented a relative expression pattern of *EZH2* significantly higher compared to patients without progression ($p < 0.0001$). **Discussion:** Few studies have evaluated *EZH2* expression in adult patients with MDS. However, these studies show controversial results. One study showed that *EZH2* overexpression is associated