BLEACHING BODY HAIR CAN POTENTIALLY INCREASE THE RISK OF GENETIC INSTABILITY AND MYELOID NEOPLASMS

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In the context of cancer development, reactive oxygen species (ROS) like hydrogen peroxide have been linked to oxidative stress and genetic instability. The STING pathway detects double-stranded DNA fragments in the cytoplasm, originating from infectious agents or genetic instability. Subsequently, it triggers an immune response pathway by activating interferon regulatory factor 3 (IRF3) and NF-κB. Furthermore, the STING pathway is also related to the NLRP3 inflammasome, activated in some bone marrow disorders, such as deletion of the long arm of chromosome 5. Notably, a common practice in Brazil involves the use of hydrogen peroxide and ammonia-based products for bleaching body hair, which has been clinically associated with the onset of myeloid neoplasms. This study sought to evaluate the gene expression of the *STING* in patients with Myelodysplastic Neoplasia and C57BL/6 mice subjected to body hair bleaching. For the cohort of patients with myeloid neoplasia, 73 patients with Myelodysplastic Neoplasia (MDS) were analyzed. Regarding mice experimental protocol, 35 male and 35 female C57BL/6 mice were topically administered solutions of hydrogen peroxide and ammonia for 10 minutes, 1-2 times a week for 8-10 weeks. The mice protocol involved various groups, including a) control group (PBS), b) peroxide group (commercial formula of hydrogen peroxide with a 12% concentration), c) acetylcysteine (NAC) control group (PBS + saline solution i.p), d) ammonia group (commercial hydrogen peroxide formula with 12% concentration + commercial hair lightening formula based on ammonia at 5,8% concentration), and e) ammonia-acetylcysteine (NAC) group (commercial hydrogen peroxide formula with 12% concentration + commercial hair lightening formula based on ammonia at 5,8% concentration + NAC i.p). *STING* gene expression was performed by RT-qPCR methodology using RNA extraction from bone marrow of MDS patients and mouse spleen. Additionally, a histological analysis was performed on the bone marrow of the mice. Analyzing the cohort of patients with MDS, it was found that *STING* gene expression was associated with specific clinical parameters. Higher *STING* expression levels were observed in MDS patients with certain characteristics, including bone marrow blast counts between 5%-10% when compared to patients who had $\leq$ 2% blasts ($p = 0.016$), the MDS-EB1 subtype compared to patients with the ring sideroblasts subtype ($p = 0.013$), and an abnormal karyotype ($p = 0.002$). In the male mice, peroxide group exhibited significantly greater *STING* gene expression compared to the control group ($p = 0.050$), and the ammonia group displayed higher expression levels compared to the NAC control ($p = 0.050$). Furthermore, the histopathological analysis showed the presence of clustered megakaryocytes in male mice from the ammonia group, a typical finding detected in bone myeloid proliferative disorders, such as myelofibrosis, polycythemia vera, and essential thrombocythemia. Exposure to hazardous substances, such as ammonia, may initiate genetic instability mechanisms that compromise the proper functionality of the bone marrow. Our results suggest a possible link between exposure to hydrogen peroxide and ammonia (bleaching body hair) and the development of bone marrow neoplasia, shedding light on the dysregulation of STING gene expression associated with these factors.

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DESENVOLVIMENTO DE PROTOCOLO DE AVALIAÇÃO NUTRICIONAL DE PACIENTES SUBMETIDOS À TERAPIA CELULAR CART-CELL

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Objetivos: Descrever o protocolo desenvolvido para a avaliação da composição corporal de pacientes submetidos à terapia celular CART-cell em um hospital quaternário localizado na zona sul de São Paulo. **Material e métodos:** O protocolo institucional para a avaliação nutricional de pacientes antes e depois da terapia celular CART-cell foi baseado na adaptação do protocolo utilizado para pacientes submetidos a transplante de células hematopoiéticas (TCTH), com especial atenção ao Consenso Brasileiro de Nutrição em Transplante de Células-Tronco Hematopoiéticas: Adultos (BARBAN et al., 2020). A equipe de Nutrição responsável recebeu treinamento específico para a manipulação adequada dos equipamentos e para o registro preciso dos dados no prontuário eletrônico. **Resultados:** Desenvolveu-se um roteiro detalhado para a implementação de um protocolo institucional de avaliação nutricional de pacientes antes e após a terapia celular CART-cell. O estudo incluiu pacientes maiores de 18 anos internados e submetidos à terapia celular CART-cell desde janeiro de 2022, excluindo pacientes menores de 18 anos e aqueles em outros tipos de terapia. As mensurações de composição corporal foram realizadas utilizando bioimpedância elétrica (InBody®), circunferências de panturrilha e braço (fita métrica), pregas cutâneas (plicômetro Lange®) e intensidade de força (dinamômetro Jamar®). Os parâmetros avaliados incluíram água corporal total, massa muscular, massa de gordura, percentual de gordura, ângulo de fase, taxa metabólica basal (TMB) e circunferência muscular do braço. **Discussão:** A terapia celular CART-cell é uma abordagem inovadora em que células T do próprio paciente são coletadas, modificadas em laboratório para expressar um receptor específico que se liga às células tumorais, e então reintroduzidas no corpo do paciente com o objetivo de aprimorar a resposta imunológica contra a doença, aumentando a eficácia do tratamento eremissões mais duradouras. Diante disso, a criação de protocolos institucionais é fundamental para garantir a consistência e a qualidade na avaliação nutricional de pacientes