World Academy of Science, Engineering and Technology
International Journal of Medical and Health Sciences
Vol:18, No:02, 2024

GATA3-AS1 lncRNA as a Predictive Biomarker for Neoadjuvant Chemotherapy Response in Locally Advanced Luminal B Breast Cancer: An RNA ISH Study

Authors : Tania Vasquez Mata, Luis A. Herrera, Cristian Arriaga Canon

Abstract : Background: Locally advanced breast cancer of the luminal B phenotype, poses challenges due to its variable response to neoadjuvant chemotherapy. A predictive biomarker is needed to identify patients who will not respond to treatment, allowing for alternative therapies. This study aims to validate the use of the lncRNA GATA3-AS1, as a predictive biomarker using RNA in situ hybridization. Research aim: The aim of this study is to determine if GATA3-AS1 can serve as a biomarker for resistance to neoadjuvant chemotherapy in patients with locally advanced luminal B breast cancer. Methodology: The study utilizes RNA in situ hybridization with predesigned probes for GATA3-AS1 on Formalin-Fixed Paraffin-Embedded tissue sections. The samples underwent pretreatment and protease treatment to enable probe penetration. Chromogenic detection and signal evaluation were performed using specific criteria. Findings: Patients who did not respond to neoadjuvant chemotherapy showed a 3+ score for GATA3-AS1, while those who had a complete response had a 1+ score. Theoretical importance: This study demonstrates the potential clinical utility of GATA3-AS1 as a biomarker for resistance to neoadjuvant chemotherapy. Identifying non-responders early on can help avoid unnecessary treatment and explore alternative therapy options. Data collection and analysis procedures: Tissue samples from patients with locally advanced luminal B breast cancer were collected and processed using RNA in situ hybridization. Signal evaluation was conducted under a microscope, and scoring was based on specific criteria. Questions addressed: Can GATA3-AS1 serve as a predictive biomarker for neoadjuvant chemotherapy response in locally advanced luminal B breast cancer? Conclusion: The lncRNA GATA3-AS1 can be used as a biomarker for resistance to neoadjuvant chemotherapy in patients with locally advanced luminal B breast cancer. Its identification through RNA in situ hybridization of tissue obtained from the initial biopsy can aid in treatment decision-making.

Keywords : biomarkers, breast neoplasms, genetics, neoadjuvant therapy, tumor
Conference Title : ICCG 2024 : International Conference on Cancer Genomics
Conference Location : London, United Kingdom
Conference Dates : February 12-13, 2024