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SHORT ABSTRAC

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SHORT ABSTRACT

According to GLOBOCAN 2020, breast cancer is the most common cancer worldwide including both men and women. Among the various sub-types, triple-negative breast cancer (TNBC) is reported as the most aggressive breast cancer sub-type and approximately 12-27% of all breast cancer cases are TNBC. Surgery, radiation, and chemotherapy are the only suitable options for the treatment of TNBC, however, the adverse effects limit their uses. Recent studies have reported that iron is an essential component for cancer cell growth, cellular respiration, oxygen transport, heme synthesis, and nucleic acid synthesis. Various studies have reported an iron transporter, also known as neutrophil gelatinase-associated lipocalin receptor (NGALR), which is associated with numerous cancers and its dysregulation is linked with cancer cell proliferation, survival, invasion, and metastasis. However, its role has not been deciphered in TNBC to date. Our study showed that NGALR was overexpressed in breast cancer tissues and associated with poor overall survival. Further, we observed significant overexpression among various sub-types of breast cancer including TNBC. We have also reported that NGALR was significantly upregulated in TNBC cell lines compared to normal cells. Moreover, TNF-α and TNF-β promoted TNBC cell proliferation, survival, EMT, and migration by increasing the expression of NGALR. However, knockdown of NGALR decreased the proliferation, survival, invasion, EMT, migration, and angiogenesis and induced autophagy by inhibiting Akt/mTOR and JAK/STAT pathways in TNBC cell lines. Therefore, NGALR could be used as a novel therapeutic target for the treatment of TNBC patients. However, further in vivo and clinical studies are required to validate these findings.