Selective inhibition of EGFR downstream signaling reverses the irradiation-enhanced migration of HNSCC cells.

Abstract:

Irradiation, which is one of the standard therapies used to treat squamous cell carcinoma of the head and neck (HNSCC), has been linked to enhanced tumor migration in carcinomas. In this study, we demonstrated that irradiation induced the phosphorylation of AKT, p38 MAPK and ERK. The combined activation of these pathways caused inactivation of GSK3β kinase, resulting in enhanced tumor cell migration. Here, we describe that the exclusive and specific inhibition of just one of the aforementioned key signaling molecules is sufficient to restore GSK3β activity and to reduce radiation-induced migration in HNSCC. These data indicate that pharmacological inhibition of pathways targeting GSK3β could decrease radiation-induced cell migration in HNSCC and thus potentially reduce metastasis and locoregional recurrence in patients.