

In the past few years many advances have been made in the diagnoses and cure of gastric cancer (GC) patients, but results, especially in terms of overall survival, remain unsatisfactory.

Epidermal Growth Factor Receptor (EGFR) overexpression has been described in many human tumours including GC. In Non Small Cell Lung Carcinomas (NSCLC) patients with somatic EGFR mutations, within the kinase domain, as well as gene amplification were associated with a good clinical response to EGFR inhibitors. In gastric tumours data concerning structural alterations of EGFR remains controversial. Given its possible therapeutic relevance, we aimed to determine the possible overexpression, frequency and type of structural alterations of the EGFR gene in a series of primary gastric carcinomas.

In this study we demonstrated that EGFR is overexpressed in a set of Portuguese GC. We didn't found any correlation between this overexpression and the clinicopathologic features of these gastric carcinomas. Although EGFR overexpression is more frequent in tumours with a higher depth of invasion; in advanced stage of disease; and in tumours with frequent lymph node metastases.

Structural alterations causing altered expression are not a frequent event in gastric carcinogenesis. In a single case EGFR gene amplification was verified. In rare cases we found EGFR point mutations affecting exon 20 and 21 and an increased copy number. EGFR structural alterations appear preferentially in gastric carcinomas of the diffuse subtype and are associated to tumour size.

What concerns to EGFR overexpression in this series of cases we can conclude that this is not caused by the structural alteration that we look for in this work, but maybe due to alterations in translation of this gene or due to alterations in protein partners.

Despite the low frequency of EGFR alterations, our results also indicate that there is a restricted group of selected gastric patients that might benefit from non conventional therapies, including pharmacological inhibitors of the EGFR receptor.

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