Summary

ERBB2 gene amplification and overexpression of ERBB2 protein have been observed in various solid tumors, including gastric carcinomas. In breast cancer ERBB2 amplification is both prognostic and predictive factor and is also a therapeutic target for the humanized monoclonal antibody trastuzumab. Some authors have evaluated ERBB2 overexpression/amplification in gastric cancer but its clinical significance remains unclear.

In this study we evaluated ERBB2 status in 463 gastric carcinomas using immunohistochemistry and fluorescence in situ hybridization. We also compared clinico-pathological characteristics with the presence of *ERBB2* amplification. Additionally, we analysed disease-specific survival in all gastric cancer patients with *ERBB2* amplification and compared with 218 randomly chosen gastric cancer patients without *ERBB2* amplification. Among the 463 cases, 43 (9.3%) showed ERBB2 overexpression by IHC and 38 (8.2%) showed *ERBB2* amplification by FISH. Perfect IHC/FISH correlation was found for 19 cases scored as 0 (all negative by FISH) and also for 25 cases scored as 3+ (all positive by FISH). One out of six carcinomas scored as 1+ and 12 out of 18 carcinomas scored as 2+ were positive by FISH. *ERBB2* gene amplification was common in intestinal carcinomas (P = 0.004) and in expansive carcinomas (P = 0.021). *ERBB2* amplification was associated with a trend towards worse survival for patients with intestinal (P = 0.268), diffuse (P = 0.062) and lymph node negative (P = 0.153) gastric carcinomas. A statistically significant association was found between *ERBB2* amplification and worse survival for expansive gastric carcinoma patients (P = 0.014).

Further studies are warranted to evaluate whether gastric carcinoma patients whose tumors present *ERBB2* amplification may benefit from targeted therapy with trastuzumab.