Background: Fibroblast growth factors (FGF) and their receptors are complex intracellular pathways that control cellular proliferation and tumour growth and invasion. FGFR alterations have been shown to be associated with the initiation and progression of gastric cancer (GC). We investigated the correlations of the FGFR2 amplification and expression with clinicopathological characteristics and outcomes in advanced/metastatic gastric cancer patients who received systemic chemotherapy based on fluoropyrimidine.

Methods: FFPE tumor samples were obtained from patients with advanced/metastatic gastric cancer who received systemic chemotherapy based on fluoropyrimidine diagnosed at 2 cancer centers between 2010 and 2016. FGFR2 gene copy number was assessed by FISH method using probes specific for the 10q26 locus and the chromosome 10 centromere (CEN10). FGFR2 amplification was defined as FGFR2/CEN10 ≥2.0. FGFR2 protein expression was determined by immunohistochemistry. Overexpression was defined as complete membrane staining intensity ≥2+ (graded from 0 to 3+) in cancer cells.

Results: From the cohort consists of 186 GC patients, FFPEs were available from 123 pts. FGFR2 amplification was found in 4/123 (3.3%) patients with FGFR2/CEN10 median 1.16 ± 1.77 and range 0.8-20.0. FGFR2 overexpression was observed in 5/123 (4.1%) patients. FGFR2 amplification had no significantly impact on overall survival (OS) and progression free survival (PFS) in compare those without FGFR2 amplification (respectively, HR = 1.43, 95% CI 0.94 to 2.14, p = 0.099 and HR = 3.06, 95% CI 0.94 to 9.97, p = 0.0628). There was no prognostic significance observed for FGFR2 overexpression on OS and PFS (respectively, HR = 1.27, 95% CI 0.52 to 2.31, p = 0.2861 and HR = 2.44, 95% CI 0.88 to 6.78, p = 0.0863).

Conclusions: The rate of GC patients with tumors positive for FGFR2 amplification or overexpression was consistent with the data published in the literature. However FGFR2 amplification and overexpression has no prognostic significance in advanced/metastatic gastric cancer patients who received systemic chemotherapy based on fluoropyrimidine. Therefore, further investigation on a larger population is required.

Legal entity responsible for the study: Celon Pharma.

Disclosure: M.M. Skupinska, J. Pieczykolan, A. Stanczak: Employee: Celon Pharma. M. Wieczorek: CEO: Celon Pharma. All other authors have declared no conflicts of interest.