Interferon-inducible guanylate binding protein (GBP2) is associated with better prognosis in breast cancer and indicates an efficient T cell response.

Recently, interferon-inducible guanylate binding protein (GBP2) has been discussed as a possible control factor in tumor development, which is controlled by p53, and inhibits NF-Kappa B and Rac protein as well as expression of matrix metalloproteinase 9. However, the potential role that GBP2 plays in tumor development and prognosis has not yet been studied. We analyzed whether GBP2 mRNA levels are associated with metastasis-free interval in 766 patients with node-negative breast carcinomas who did not receive systemic chemotherapy. Furthermore, response to anthracycline-based chemotherapy was studied in 768 breast cancer patients. High expression of GBP2 in breast carcinomas was associated with better prognosis in the univariate (P < 0.001, hazard ratio 0.763, 95% CI 0.650-0.896) as well as in the multivariate Cox analysis (P = 0.008, hazard ratio 0.731, 95% CI 0.580-0.920) adjusted to the established clinical factors age, pT stage, grading, hormone and ERBB2 receptor status. The association was particularly strong in subgroups with high proliferation and positive estrogen receptor status but did not reach significance in carcinomas with low expression of proliferation associated genes. Besides its prognostic...
capacity, GBP2 also predicted pathologically complete response to anthracycline-based chemotherapy (P = 0.0037, odds ratio 1.39, 95 % CI 1.11-1.74). Interestingly, GBP2 correlated with a recently established T cell signature, indicating tumor infiltration with T cells (R = 0.607, P< 0.001). GBP2 is associated with better prognosis in fast proliferating tumors and probably represents a marker of an efficient T cell response.