BCL11A gene and BCL2 protein in prediction of survival in triple-negative breast cancer treated with anthracycline-based adjuvant chemotherapy

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The prognosis of triple-negative breast cancer (TNBC) is poor and patients cannot benefit from targeted treatment. Moreover, validated predictors for chemotherapy sensitivity are not available for TNBC. BCL11A transcription factor has been recently described as an oncogene in TNBC with critical functions in stem and progenitor cells. The objective of our study was to determine whether BCL11A gene and BCL2 protein status predict therapy sensitivity in TNBC patients. Fresh-frozen tumor tissues were collected from 148 TNBC patients. Genomes of these samples were profiled by Affymetrix SNP6.0 arrays and BCL2 protein was assessed by IHC. TNBC patients with BCL11A deletion treated with anthracycline-based chemotherapy had worse outcome (breast cancer specific survival, BCSS, logrank p=0.017; relapse free survival, RFS, logrank p=0.021) than those with normal or amplified status. Multivariate analysis found BCL11A as an independent predictor of BCSS and RFS in TNBC treated with anthracycline-based adjuvant chemotherapy. This is the first study showing BCL11A copy number status as independent predictor of outcome in TNBC treated with anthracycline-based chemotherapy. High levels of BCL2 expression predicted poor overall survival (OS) in basal-like TNBC patients treated with adjuvant anthracycline-based regimens (log-rank p=0.033). Multivariate analysis for TNBC and its basal-like sub-group identified BCL2, tumor size and nodal status as independent predictors for RFS, BCSS and OS. BCL11A oncogene deletion was paradoxically found as a negative predictive factor for anthracycline-based chemotherapy, similarly as BCL2 high protein expression. BCL11A copy number and BCL2 protein could facilitate decision making on adjuvant therapy.

Biography
Katerina Bouchalova has received her MD and completed her PhD from Palacky University. She is a Physician and Senior Researcher at Institute of Molecular and Translational Medicine, Palacky University. She has published 19 original investigations and review articles, mostly on breast cancer.

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