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Inflammation/obesity genes ITLN1 (Rs952804) and cytokine receptor family protein CD295 (Rs6700986) SNPs and DNA damage in breast cancer

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Mutations in cluster of differentiation (CD) 295 gene, encoding class I cytokine receptor, are associated with obesity and breast cancer (BC). SNPs in the adipocyte-inferred novel cytokine intelectin 1 (ITLN1) remain understudied in connection to CD295 polymorphisms and diabetes mellitus (DM) or a pre-diabetic state, as well as to DNA damage seen in BC. We will explore whether CD295 (ID rs6700896) and ITLN1 (rs rs952804) SNPs impact BC with or without DM, insulin resistance (IR) or obesity. Effects of ITLN1 or CD295 polymorphism(s) on DNA damage in BC were also examined. Blood samples from 170 women with BC (including 33 and 48 with DM and pre-diabetes, respectively) and from 108 age-matched women in the control group were collected. Plasma insulin, leptin, CD295, and ITLN1 levels were measured by ELISA. DNA damage was assessed using an alkaline comet assay. BC cases with clinical stage T II and positive LN as well as tumor histologic grade III, presence of obesity, pre-diabetic events, DM or IR were associated with CD295 rs6700986 mutant homozygous (CC) and heterozygous (CT) genotype and ITLN1 rs952804 mutant heterozygous genotype (CT) ($P \leq 0.05$). Tail DNA (%) and tail moment units were significantly associated with CD295 rs6700986 CT and ITLN1 rs952804 TT genotypes. C allele (CT+CC vs. TT) and T allele (TT+CT vs. CC) for CD295 rs6700986 and ITLN1 rs952804, respectively, were associated with BC risk ($P \leq 0.05$). ITLN1 (rs952804) and CD295 (rs6700986) SNPs should be considered as BC associated-susceptibility risk factors in obese, insulin resistant, or pre-diabetics.

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