A variant affecting miRNAs binding in the circadian gene Neuronal PAS domain protein 2 (NPAS2) is not associated with breast cancer risk.

Disruption of the circadian rhythm has been reported to increase the risk of breast cancer. A single nucleotide polymorphism (SNP) rs2305160 in Neuronal PAS domain protein 2 (NPAS2), the largest circadian gene, was identified as a breast cancer susceptibility locus. In the current study, we found a novel functional SNP (rs3739008) located at 3'UTR of NPAS2 and the C to T changing of the SNP may disrupt the binding of microRNA-17-5p and miR-519e to the 3'UTR of NPAS2. We then typed this SNP in case-control studies of both Chinese and Germany populations to test its putative associations with breast cancer risk. However, we failed to find any significant associations by different genetic models (dominant genetic model, adjusted OR = 1.13, 95% CI = 0.95-1.35 for the Chinese population and adjusted OR = 0.99, 95% CI = 0.85-1.16 for the Germany population). Although we did not find significant associations at population levels from both Chinese and Germany case-control studies, due to the functional relevance of rs3739008 on NASP2 expression, it will be promising to investigate the influence of this variant on clinical characteristics of breast cancer and breast cancer survival.