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Association of *X-ray* Repair *Cross-complementing 6* Single Nucleotide Polymorphisms with Childhood Leukemia

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Backgrounds: Non-homologous end-joining repair gene *XRCC6/Ku70* plays an important role in the repair of DNA double strand breaks (DSBs), and was found to involve in the carcinogenesis of many types of cancer including oral, prostate, breast and bladder cancer. However, the contribution of *XRCC6* to childhood leukemia has never been studied. In this study, we investigated the association of *XRCC6* genotypes to the risk of childhood leukemia. **Materials and Methods:** In this study, 266 patients with childhood leukemia and the same amount age-matched healthy controls recruited in Central Taiwan were genotyped investigating these polymorphisms' association with childhood leukemia. **Results:** As for *XRCC6* promoter T-991C, the people carrying TC genotype had significantly increased risk of childhood leukemia compared with the TT wild-type genotype [odds ratio = 2.30, 95% confidence interval = 1.38-3.84, p = 0.0047]. Meanwhile, the genotypes of *XRCC6* promoter C-57G, A-31G and intron 3 were not significantly associated with childhood leukemia risk. **Conclusions:** Our findings suggested that *XRCC6* genotype could serve as a predictor of childhood leukemia risk and XRCC6 may serve as a target for personalized medicine and therapy in the near future.