The Association of Polymorphisms rs2055314, rs2272522 and rs331894 in Close Homologue of L1 gene (CHL1) with Schizophrenia in the State of Qatar

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Background: Previous reports demonstrated polymorphisms in the CHL1 gene located on chromosome 3p26 (close homologue of L1) are associated with schizophrenia among different ethnic populations. The aim of this study is to investigate the associations of the haplotypes of the theses genetic marker (SNPs) of CHL1 gene locus; rs2055314(C/T), rs2272522 (C/T) and rs331894 (A/G) with schizophrenia patients in Qatar populations.

Methods: A case control study association was carried out on 48 Qatari schizophrenic patients [from Psychiatry Hospital, Hamad Medical Corporation, Qatar] and 47 unrelated, healthy, control Qatari subjects. Schizophrenia was diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition (DSM-IV) criteria for schizophrenia by two independent psychiatrists. Genotyping of SNP rs2055314 (C/T) rs2272522 (C/T) and rs331894 (A/G) was carried out by the 5' nuclease assay using TaqMan MGB probe by means of an ABI 7500 [Applied Biosystems].

Results: All SNPs are within the Hardy-Weinberg Equilibrium (HWE). The frequency distribution of the genotype rs2055314 (C/T) revealed that (35.30%), (31.25%), had CC and (35.30%), [58.33%] had CT, and (29.41%), [10.42%] had TT among control and schizophrenic patients, respectively with P value= 0.034. The minor allele frequency (T) was 0.361 for all subjects, with odds ratio =0.84 and 95% CI was (0.37-1.91) with P value= 0.67 between cases and controls. Using the genetic recessive model, odds ratio was 4.00 and 95% CI was (0.96-16.69) with P value= 0.05 between cases and controls. The frequency distribution of the genotype rs331894 (G/A) revealed that (12.77%), (6.25%), had GG and (40.42%), [50.00%] had GA, and (47.65%), [43.75%] had AA among control and schizophrenic patients, respectively with P value= 0.003. The minor allele frequency (G) was 0.407 for all subjects, with odds ratio =0.28 and 95% CI was (0.12-0.65) with P value= 0.002 between cases and controls. Using the genetic recessive model, odds ratio was 22.00 and 95% CI was (2.40-221.49) with P value= 0.0005 between cases and controls.

Conclusion: Our findings therefore strengthen the association between the CHL1 gene markers; rs2055314 and rs331894 with schizophrenia and also support the view that cell adhesion molecules could be involved in the etiology of this disease among Qatari patients.