

Susceptible and Protective HLA Class I and Class II Alleles against Influenza-like Illness and Its Complication in a Taiwanese Population

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Background/Objective

HLA class I and class II alleles have been shown to be associated with the development of severe viral infections such as dengue shock syndrome. To date, the prevalence and severity of influenza infections in a population of influenza-like illness (ILI) patients, and the influence of HLA alleles on severe complicated case (SCC) and death are rarely reported. In this study we aimed to investigate the HLA-class I and class II alleles that are positively and negatively associated with the development of SCC and death in a cohort of patients with ILI and also the alleles associated with development of ILI during primary influenza infections in a Taiwanese population.

Method

Whole blood specimens were collected from 60 patients with ILI, the allele frequencies of HLA class I and class II alleles were analyzed and compared with the frequencies of Taiwanese normal population.

Result

We found that HLA-A*33 (corrected P [Pc] = 0.001) was associated with susceptibility to ILI when infected with the influenza virus. By contrast, the HLA-A*26 (Pc = 0.002) and HLA-Cw*10 (Pc = 0.001) conferred protection from progression to ILI when infected with the influenza virus. The HLA-A*33 (corrected P [Pc] = 0.001) was associated with susceptibility to ILI when infected with the influenza B virus. The HLA-Cw*10 allele was associated with a reduced risk of developing ILI due to influenza A (Pc = 0.018) and influenza B (Pc = 0.003). Moreover, the HLA-DRB1*03 was also strongly associated with a reduced risk of developing severe complication (Pc = 0.024).

Conclusion

These data suggest that certain HLA alleles confer susceptibility/protection to severe influenza infections. The HLA-A*33 probably involve in disease susceptibility, especially to influenza B virus. The HLA-A*26 and HLA-Cw*10 may confer protection from ILI and the HLA-DRB1*03 was associated with protection from progression to severe complication.