Poster Presentation

A comparison of HLA-B*15:02 screening tests before prescribing carbamazepine

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Introduction: HLA-B*15:02 is the most significant biomarker associated with carbamazepine-induced severe cutaneous drug reaction in Asians. A number of HLA-B*15:02 screening tests have been developed to prevent the drug reaction in clinical practice. However, no comparison of these methods has to date been reported.

Objective: To compare different HLA-B*15:02 screening tests

Methods: The key word "HLA-B*15:02" was searched on PubMed and the Thai Patent Database. We also included HLA-B*15:02 theses studies. All tests were compared regarding techniques, sensitivity, specificity, and false-positive results. The false positive allele results and their frequencies were analyzed using the online IMGT/HLA and Allele Frequencies databases.

Results: Seven HLA-B*15:02 screening tests were found, including two multiplex PCRs (one from the Thai Patent Database, one used in an association study), one commercial allele-specific PCR, one commercial real-time PCR, one LAMP (loop-mediated isothermal amplification), one nested PCR, and one two-step technique using allele-specific PCR and direct dot blot hybridization. Six tests had > 99% sensitivity while the multiplex PCR from an association study has never been validated. The specificities ranged from 98.35% to 99.9%. However, four tests (the allele-specific PCR, the real-time PCR, and the two multiplex PCRs) gave a false positive result to HLA-B*15:13. The HLA-B*15:13 allele is very rare in East Asians but not uncommon in Southeast Asians (allele frequencies as high as 0.10 in Malaysia and Indonesia).

Conclusion: All available screening tests are different in terms of techniques, specifications, and detection of a false positive allele (HLA-B*15:13). For cost effectiveness, technical tests and false-positive results should be thoughtfully considered before implementing any HLA-B*15:02 screening test.