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Introduction

HLA-B*57:01 is a now a well-known pharmacogenetic marker for Abacavir hypersensitivity among HIV+ individuals, which can be fatal and leads to treatment failure and important economic costs for health systems. The utility and cost-effectiveness of the typing of this allele as a prospective marker has been confirmed to decrease or abolish Abacavir hypersensitivity reactions in these patients. However, as for other HLA alleles, there is widespread variation in its frequency across populations. Thus, characterization of the frequency of this marker in a given population is the first step towards the evaluation of the feasibility and need of pharmacogenetic screening for this drug.

Materials and Methods

Peripheral blood or saliva samples from healthy unrelated volunteer donors were obtained by venipuncture or by collection of saliva using the ORAGENE-ONE collection kits (DNA Genotek Inc., Ottawa). In the case of blood samples, DNA was extracted by an in-house salting-out method. For the saliva samples, the manufacturer’s extraction method was followed. All participants were born in the Costa Rican Central Valley and signed an informed consent. A total of 153 samples from CCVP inhabitants were genotyped. The samples were typed to intermediate resolution by SSO or SSP methods, and samples that were HLA-B*57-positive were further typed by SBT in order to define the alleles to four-digit resolution.

Results

HLA-B*57 alleles were present in a 6.5% of the subjects (Table 1). Moreover, an HLA-B*57 carrier frequency of 5.23% (allele frequency of 2.61%) was determined in this sample. Table 2 shows the frequencies of HLA-B*57 alleles in this sample. This frequency is relatively high in comparison to reports from other populations in Latin America. These results suggest that there is a considerable frequency of HLA-B*57 in the CCVP and that pharmacogenetics testing for HIV+ patients who are going to receive Abacavir-based treatment schemes is likely to benefit the security of this therapy. According to WHO data, we hypothesize that some 200,000 persons in this country would be susceptible to Abacavir-induced hypersensitivity, and that some 15,000 HIV+ people living in Costa Rica could benefit from prospective HLA-B*57:01 genotyping.

Conclusions

HLA-B*57:01 is present in the CCVP at a relevant frequency and thus, it is likely that people that carry this allele in this population are at risk of suffering Abacavir-mediated hypersensitivity reactions. This is evidence towards the need for the development of pharmacogenetic testing among HIV-positive patients who will be receiving Abacavir as part of their treatment. However, clinical studies that show the relation between these reactions and this allele in the CCVP must be carried out.

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