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Ancestry informative markers and parameters of complete blood count in Brazilian blood donors

Marcadores informativos de ancestralidade e parâmetros no hemograma de doadores de sangue brasileiros

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In the post-Human Genome Project era, the debate on the concept of race/ethnicity and its implications for biomedical research are dependent on two critical issues: whether and how to classify individuals and whether biological factors play a role in health disparities. The advent of reliable estimates of genetic (or biogeographic) ancestry has provided this debate with a quantitative and more objective tool. New techniques such as admixture mapping can detect population-specific risk alleles for a disease in admixed populations. However, researchers have to be mindful of the correlation between genetic ancestry and socioeconomic and environmental factors that could underlie these differences.[1]

Recent scientific advances have given this debate new meaning. Through genetic testing, investigators can now measure genetic or biogeographic ancestry. In short, we can use genetic testing to determine and quantify an individual's ancestral background with statistical precision. Only recently have the applications of ancestry testing entered into biomedical research and clinical practice.[2]

Genetic differences between human populations have revived an old and widespread debate on the concept of "race" and its validity as a taxonomic classification. Although, many investigators have argued that this construct offers an opportunity to study the interaction between genetic, environmental, and social contributions to disease occurrence and drug response, several investigators disagree and see racial identity primarily as a social construct that can misdirect the categorization of participants in research projects.[3-5]

The peripheral white blood cell count (WBC) is a common clinical measurement used to identify acute inflammation or infection. The peripheral WBC is the sum of several cell types including neutrophils and lymphocytes, the most common types of WBC, as well as less common cell types such as eosinophils, basophils, and monocytes. Elevated WBC has been associated with risk of coronary heart disease, cancer, and all-cause mortality. White blood cell levels have widespread clinical applications including the assessment of patients undergoing chemotherapy and the evaluation of infection.[6,7]

Admixture mapping is a technique for localizing genetic variants in recently mixed populations11 in which linkage disequilibrium (LD) extends tens of megabases because the chromosomes have had insufficient time to break up due to recombination.[8]

In this issue of the journal, Santo Felix *et al.* (2010)[9] studied the complete blood counts and the allele frequencies of ancestry informative markers of one hundred Brazilian individuals (68 men and 32 women). These authors observed positive associations between gender and neutrophils, monocytes, eosinophils, erythrocytes, hemoglobin, hematocrit, MCV, MCHC and the platelet counts ($P<0.05$). No significant differences were found for age, alcohol consumption, educational status, ethnicity, smoking status and CBC values ($P>0.05$). The men presented higher RBC counts, while the women presented higher WBC and platelet counts. The study population was highly heterogeneous with the mean estimated proportions (± SE) of African, European and Amerindian ancestry being 49 ± 3%, 44 ± 9% and 7 ± 9%, respectively. The Amerindian ancestry showed a limited contribution, but the difference in estimated ancestral proportions was statistically significant ($r = 0.9838$; $P<0.001$). These hematologic values are similar to other admixed populations such as the African-American population.

Although the sample size is low, the report by Felix et al. is very important to better know ancestry informative markers in the Brazilian population.

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