Prevalence of an inherited cancer predisposition syndrome associated with the germ line TP53 R337H mutation in Paraguay.

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Abstract
The tumor suppressor gene TP53 is the most frequently mutated gene in human cancer, and the germline TP53 R337H mutation is the most common mutation reported to date. However, this mutation is associated with a lower cumulative lifetime cancer risk than other mutations in the p53 DNA-binding domain. A detailed statistical analysis of 171,500 DNA tests in Brazilian neonates found that 0.27% of the general population is positive for this mutation, and some of the estimated 200,000 Brazilian R337H carriers in southern and southeastern Brazil have already developed cancer. The present study was designed to estimate R337H prevalence in neighboring Paraguay. To address this question, 10,000 dried blood samples stored in Guthrie cards since 2008 were randomly selected from the Paraguayan municipalities located at the border with Brazil. These samples were tested for R337H mutation using the PCR-restriction fragment length polymorphism assay. This germline mutation was detected in five samples (5/10,000), indicating that the total number of R337H carriers in Paraguay may be as high as 3500. Previous studies have shown that other countries (i.e., Portugal, Spain, and Germany) presented one family with this mutation, leading us to conclude that, besides Brazil and Paraguay, other countries may have multiple families carrying this mutation, which is an inherited syndrome that is difficult to control.

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Cancer; Li–Fraumeni syndrome; TP53 R337H mutation