A HIGHLY PREVALENT TP53 MUTATION PREDISPOSING TO MULTIPLE CANCERS IN THE BRAZILIAN POPULATION: CASE FOR NEWBORN SCREENING?

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Introduction: The unusual high population frequency of a germline TP53 mutation (R337H) predisposing to early cancer has led to mass newborn testing for this mutation in the State of Paraná, Southern Brazil. Newborn screening (NBS) for inherited cancer risk is complex and controversial. Methods: Here we discuss justifications for NBS in the light of medical and scientific evidence on this mutation and according to the original criteria of Wilson and Jungner for inclusion of a test in NBS (1969). Results: R337H has been identified in Brazilian families with Li-Fraumeni or related syndromes (LFS/LFL) predisposing to cancers in childhood (brain, renal, adrenocortical carcinoma), adolescence (soft tissue and bone sarcomas) and young adulthood (breast, others). R337H has also been detected in childhood adrenocortical carcinoma patients without documented cancer familial history. The mutation is estimated to occur in about 0.3% of the population of Southern Brazil and is associated with increased cancer risk throughout life. Cancer patterns in R337H families suggest strong genetic modifying effects, making it difficult to predict individual risk. Conclusions: Since protocols for cancer risk management in LFS/LFL are a matter of debate, extreme care should prevail in predictive testing of minors for R337H. Detailed evaluation of risks, benefits and costs are needed to ensure that medical, social and ethical justifications for NBS are met.