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Potential of a pharmacogenetic-guided algorithm to predict optimal Warfarin dosing in a high-risk Hispanic patient: Role of a novel NQO1*2 polymorphism

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A case to illustrate the clinical utility of ethno-specific pharmacogenetic testing in warfarin management of a Hispanic patient is reported. A 37 year-old Hispanic Puerto Rican, non-gravid female with past medical history of abnormal uterine bleeding on hormonal contraceptive therapy was evaluated for abdominal pain. Physical exam was remarkable for unspecific diffuse abdominal tenderness and general initial laboratory results were unremarkable with a PT and PTT of 10.0 and 26.6 sec., respectively and INR of 0.9. A contrast-enhanced computed tomography showed a massive thrombosis of the main portal vein, splenic vein and superior mesenteric vein. Upon admission patient is started on oral anticoagulation therapy with warfarin at 10 mg/day and low molecular weight heparin. Strikingly, the prediction of 7.5 mg/day of maintenance warfarin, which was estimated by using a recently developed pharmacogenetic-guided algorithm for Caribbean Hispanics, coincided with the patient's actual effective warfarin dose. We speculate that the slow rise in patient's INRs observed upon the initiation of warfarin therapy, the resulting high risk for thromboembolic events and the final maintenance warfarin dose of 7.5 mg/day are attributable in some part to the presence of the NQO1*2 (g.559C>T, p.P187S) polymorphism, which seems to be significantly associated with resistance to warfarin in Hispanics. By adding the genotyping result of this novel variant, the predictive model can now inform clinicians better about the optimal warfarin dose in this medically underserved population with lack of representability in most clinical studies. The results highlight the potential for pharmacogenetic testing of warfarin to improve patient care.

Biography

Dagmar F Hernandez-Suarez is currently an Internal Medicine Resident at the University of Puerto Rico-Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico. He has completed his Medical degree at the "Instituto de Ciencias Medicas de La Habana", Cuba in 2011. In 2015, he has joined the Post-Doctoral Master in Clinical and Translational Sciences and was recognized with the receipt of a CRECD Scholar Research Award for Phase I. He is currently working on the development of a research proposal in pharmacogenomics of anti-platelet drugs.

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