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Pharmacogenetics in clinical practice and medicine reconciliation

Pharmacogenetics is the branch of Pharmacology that studies the genetic basis of variability in response to drug therapies in terms of both efficacy and toxicity. Through pharmacogenetic testing, DNA variants, identified as polymorphisms, that have been associated with variable response to drugs are analyzed. Interindividual variability in drug response is a very common occurrence in many therapeutic areas. The same drug (or the same drug dose), may be effective in the majority of patients, but poorly effective or ineffective in others. Individual therapeutic response can be influenced by many factors, including genetic makeup.

In recent years, several biomarkers have been proposed to personalize the therapy and pharmacogenetic analysis may be of great help to identify patients at high risk of treatment failure and to choose the treatment predicted to have the highest probability of success.

The Clinical Pharmacogenetics Implementation Consortium CPIC and other international groups, such as the Dutch Pharmacogenetics Working Group (DPWG) and the Canadian Pharmacogenomics Network for Drug Safety (CPNDS) have developed specific pharmacogenetic guidelines useful to predict the response to several pharmacotherapies, including such as Vitamin k antagonists (VKA), antiplatelet agents such as clopidogrel, antivirals such as the abacavir, anticancer drugs such as fluoropyrimidines and many others.

Unfortunately, a magic bullet does not exist, as several patients' characteristics (such as sex/ gender, pharmacokinetics, previous pharmacological treatments, comorbidity, and polypharmacy) are deeply interconnected. Moreover, the influence of a single gene is usually very limited that makes it necessary to concomitantly evaluate the presence of various polymorphisms and haplotypes and, more generally, to set up complementary strategies taking into account all the measurable variables that act around the congenital background.

Pharmacogenetic testing is a valuable resource that physicians can use along with other information to tailor treatments to ensure that each patient receives the most appropriate therapy.

Recent publications

1. Stefanelli B, Sellitto C, De Bellis E, Torsiello M, Bertini N, Pezzullo AM, Corbi G, Sabbatino F, Pepe S, Tesse A, Conti V*, Filippelli A. Concomitant Administration of Capecitabine and Folate Supplements: Need to Encourage Medication Reconciliation. Pharmaceuticals (Basel). 2022 Nov 10;15(11):1388. doi: 10.3390/ph15111388. *(Corresponding author)

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Biography

Valeria Conti earned PhD in Pharmacology in 2010 and Post degree specialization in Pharmacology in 2011. She was fellow at the "Telethon Institute of Genetics and Medicine" in Naples (2002-2005) and Fellow at the Second University of Naples (2005-2011). She is Associate Professor in Pharmacology at the Dept. of Medicine of the University of Salerno and Coordinator of Unit of Pharmacogenetics at the University Hospital of Salerno. Her main research fields are Clinical Pharmacology, Pharmacogenetics, Medicine reconciliation, Oxidative Stress, Aging, Exercise. Prof. Conti has published 95 papers in peer-reviewed journals and she was Speaker at numerous National and International meetings.

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