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Can pharmacogenomics reduces adverse drug reactions?

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Abstract

Adverse drug reactions (ADRs) are one of the major causes of patient morbidity and mortality. Pharmacogenetics is the study of how the genetic variations affect drug response in individual patients, while pharmacogenomics emphasizes the identification of the network of genes that govern drug response in individual patients using genome-wide approaches. Numerous genes, in particular those encoding drug metabolizing enzymes, drug transporters and drug targets, have been identified to affect drug response and ADRs. In the past decade, my laboratory has investigated the impact of polymorphisms of a number of important genes including *CYP2B6*, *CYP2C9*, *ApoE*, *PXR*/*NR1I2*, *UGT1A1*, *GSTM1*, *GSTT1*, *GSTP1*,*TPMT*, etc. on drug clearance, response, or ADRs. Mutations of these genes can significantly alter drug clearance, response or ADRs in different ethnic groups.In addition, mutations of certain genes can precipitate ADRs. Over the past years, genome-wide association studies (GWAS) have identified a number of common and rare variants that are associated with increased risk of ADRs. As affordable and reliable genetic testing tools become available to physicians, pharmacogenomics looks promising to facilitate individualization of drug therapy and as a result, this will maximize the therapeutic efficacy of drugs in patients while minimizing the occurrence of ADRs.

Biography

Dr Shu-Feng Zhou, MD &PhD, is presently a Professor of Pharmacology and Molecular Medicine, Associate Vice President of Global Medical Development, Associate Dean of International Research, and Chair of the Department of Pharmaceutical Sciences, Colleges of Pharmacy and Medicine, University of South Florida, Tampa, Florida. He has published more than 320 peer-reviewed papers in biomedical journals, which has been cited more than 7,500 times by colleagues with an H-index of 44. He is the editor or editor-in-chief of 16 medical journals and the editorial board member of 34biomedical journals. To date, he has trained 24 PhD students, 12 MSc/Honors students, 14 postdoctoral staff and 15 visiting doctors from other countries.

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