Pharmacogenetics in the clinic

H.-J. Guchelaar *

Leiden University Medical Center, Dept. of Clinical Pharmacy & Toxicology, Leiden, The Netherlands

Pharmacogenetics is one of the first clinical applications of the postgenomic era; it studies the role of heritability of drug responses. It promises personalised medicine rather than the established 'one size fits all' approach to drugs and dosages. This should ultimately lead to more efficient and safer drug therapy. In recent years, pharmacogenetic information has been included in drug labels (especially for oncology drugs), and commercially available pharmacogenetic tests have been approved by the Food and Drug Administration (FDA), but their application in routine patient care remains limited. Indeed, the implementation of pharmacogenetics in routine clinical practice presents significant challenges. The clinical value and the interpretation of pharmacogenetic tests are found difficult. Now, pharmacogenetics-based therapeutic (dose) recommendations, based upon the systematic review of the literature, are available for 53 drugs associated with genes coding for CYP2D6, CYP2C19, CYP2C9, thiopurine-S-methyltransferase (TPMT), dihydropyrimidine dehydrogenase (DPD), vitamin K epoxide reductase (VKORC1), uridine diphosphate glucuronosyltransferase 1A1 (UGT1A1), HLA-B44, HLA-B*5701, CYP3A5 and factor V Leiden (FVL). These two large initiatives are made available through the pharmacogenomics knowledge base and may help clinicians to make use of current pharmacogenetic knowledge. In the teaching lecture specific clinical examples of challenges for implementation of pharmacogenetics are discussed, and best practices for implementation will be presented.

Conflict of interest statement

None declared.

* Tel.: +31 (0) 71 526 2790.
E-mail address: h.j.guchelaar@lumc.

http://dx.doi.org/10.1016/j.ejcsup.2013.07.051