Pharmacogenetics: Future Solution or Overstated Promise? A Critical View on the Current Situation

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Pharmacotherapy is far more complex than can be adequately managed by pharmacogenetics (PGx) or pharmacogenomics alone. Factors such as absorption, protein binding, tissue distribution, and pharmacokinetics significantly influence therapeutic outcomes and may outweigh the impact of genetic variation. Currently, broadly applicable clinical decision-support tools to optimize individualized patient therapy are lacking for clinicians. PGx must still establish a stronger connection to clinical practice and, where possible, the expected effects should be confirmed individually with functional tests. At the same time, it is essential to clearly define the limitations of PGx. At present, PGx is often driven by commercial interests. After considerable expense, patients are sometimes given unrealistic expectations of avoiding adverse drug reactions and consistently achieving optimal therapeutic efficacy. This perspective ignores the fact that robust clinical evidence for PGx-guided therapy exists only for a limited number of drugs. Instead, research and debate frequently focus on individual polymorphisms for which clinical evidence is weak or absent. After decades a connection between specialists in PGx diagnostics and clinicians must be finally established! Some personal data are presented showing discrepancies between PGx results (standardized interpretation of metabolizer status) and functional assays.