LOW DRUG METABOLIZERS, CYTOCHROME 2D6 (CYP2D6*3, CYP2D6*4, CYP2D6*5, CYP2D6*6)

PATOGENESI

Cytochrome 2D6 (CYP2D6) belongs to the P-450 family of cytochromes. These cytochromes are very important, as they are responsible for phase I metabolism for many drugs in current use and for some endogenous substances (eg hormones). In phase I metabolism the drug is hydroxylated, so as to assume a greater hydrophilic characteristic, this process assumes different meaning depending on the drugs. Sometimes hydroxylation gives rise to the pharmacologically active metabolite (for example codeine), other times it transforms the drug into an inactive metabolite (for example imipramine). Polymorphisms on the genes of cytochromes P-450 can lead to the synthesis of enzymes with different activities, capable of metabolizing quickly (low-metabolizers; fast-metabolizers), leading to an accumulation in the case of a low-metabolizer or its disappearance too rapid out of circulation in the case of a fast-metabolizer. These variations in pharmacokinetics can cause unwanted side effects. Knowing a priori which polymorphism a patient has is useful in choosing the drug or the dosage of the same, in order to obtain the best therapeutic effect while avoiding unpleasant side effects. Blood / EDTA, 5 ml (even a smaller quantity in case of difficult withdrawal). Daily

POLYMORPHISMS

CYP 2D6 polymorphisms known as poor metabolizers are:
CYP2D6 * 3,
CYP2D6 * 4,
CYP2D6 * 5,
CYP2D6 * 6.
(These polymorphisms cover 97% of low-metabolizers).

TEST

By means of PCR four fragments of the CYP2D6 gene are amplified where the polymorphisms are found, which are then identified by restriction analysis. Results are provided as wild-type (normal) heterozygous or homozygous mutated.

SAMPLE TAKING

Blood/EDTA, 5 ml.

EXECUTION

Daily.

Laboratorio di diagnostica molecolare

Further information or bibliographic references can be asked to the laboratory.