Medication and QT interval prolongation

The QT interval is the ECG parameter that reflects the duration of the action potential of cardiac muscle cells. This interval may vary with factors like age and sex. A prolonged QT interval is associated with a risk of potentially fatal ventricular arrhythmias such as torsade de pointes.

The scientific literature offers evidence that a number of drugs can cause QT interval prolongation, the risk being increased by the presence of risk factors such as heart failure, left ventricular hypertrophy or electrolyte disturbance. The available evidence is insufficient to allow the risk to be expressed in exact figures. The prevalence of drug-induced QT interval prolongation is probably low. Drugs that have been associated with this side-effect include anti-arrhythmics, antipsychotics and antidepressants, quinolone and macrolide antibiotics, and domperidone. The scientific evidence for these associations is mostly weak, as it is based on findings from cohort studies or from (extensive) reports to adverse events reporting systems.

Despite the low incidence of and weak evidence for this side-effect, some practical measures need to be taken. Doctors and pharmacists prescribing and delivering drugs known to carry a risk of QT interval prolongation should take account of the risk factors, which can be obtained by asking the patient, or sometimes can be derived from their co-medication and comorbidity. The use of these drugs is contraindicated for patients with the long-QT syndrome and patients with a history of QT interval prolongation. Combinations of agents that may prolong the QT interval should also be avoided if possible, in view of the elevated risk. As a general rule, any risk of QT interval prolongation and torsade de pointes should be avoided, especially if the patient's complaints are not very serious. This can be done by choosing an alternative drug. If the use of a particular drug or combination of drugs is imperative, an ECG should be made to exclude possible QT interval prolongation. In addition, the patient must be informed about the symptoms that could indicate QT interval prolongation, such as dizziness or palpitations, and must be instructed to report such symptoms to the prescribing doctor.

References*

35. Nuttall GA, Eckerman KM, Jacob KA, Pawlaski EM, Wigersma SK, Marienau ME, et al. Does low-dose droperidol administration increase the risk of drug-induced QT prolongation and torsade de pointes in the general surgical population?

*The literature refers to the Dutch text*