Guidelines for Therapeutic Drug Monitoring of Cardiovascular Drugs

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Scope of the lecture:
TDM for cardiovascular drugs including digoxin and antiarrhythmic drugs

Learning objectives:
1. To recognize the role of blood drug concentration monitoring of cardiovascular drug
2. To recognize the limitations of blood drug concentration monitoring of cardiovascular drug
3. To recognize the role of the Guidelines for Therapeutic Drug Monitoring of Cardiovascular Drug.

Extended abstract:
The principle of pharmacotherapy is maximizing the pharmacological effect while minimizing adverse reactions. Therapeutic drug monitoring (TDM) is a strategy to individualize drug treatment through monitoring various factors that affect the efficacy and adverse effects of drugs. Antiarrhythmic drugs have long been investigated for their pharmacokinetic behaviors in the body and efficacy, and are used in the clinical setting on the basis of TDM findings. However, blood concentrations of antiarrhythmic drugs should be interpreted according to not only expertise in pharmacokinetics, pharmacodynamics, and drug interactions, but also patient adherence to treatment. The National Health Insurance in Japan covers the clinical use of blood drug concentration monitoring for many antiarrhythmic drugs and digoxin, but many practitioners do not use it well because the role and definition of TDM have not been established fully. Accordingly, the Japanese Circulation Society (JCS) and the Japanese Society of Therapeutic Drug Monitoring (JSTDM) decided to jointly create the Guidelines for Therapeutic Drug Monitoring of Cardiovascular Drugs in order to ensure safe and effective pharmacotherapy for the treatment of cardiovascular diseases through appropriate TDM.

Recently, TDM is increasingly being expected to play a role as a safety index especially in the pharmacotherapy of cardiovascular diseases. The present guidelines are prepared for physicians who prescribe drugs for the treatment of cardiovascular diseases, and pharmacists, nurses, and clinical laboratory technologists who work with them.

The present guidelines describe how to conduct TDM appropriately (e.g., appropriate timing of blood sampling as the elapsed time from the last dose and that from the initiation of treatment) in the clinical setting and interpret blood drug concentrations, as well as limitations of TDM. Cardiovascular drugs described in the present guidelines are those of which TDM is commercially available and covered by the National Health Insurance in Japan.

The practice guidelines were prepared according to the procedures proposed by the Medical Information Network Distribution Service (MINDS). Guideline Writing Groups of the JCS and the JSTDM specified Clinical Questions (CQs) on cardiovascular drugs. The JCS Guideline Writing Group specified questions on the use of TDM where evidence is limited to list them as How To Use (HTU) questions, and the JSTDM Guideline Writing Group prepared answers to HTU questions with a certain level of consensus.