Drug-induced Skin Reactions

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Conventionally, the development of new drugs has depended on the use of active ingredients of natural products or the chemical synthesis of artificial compounds. This process has mainly relied on fortuitous discoveries and the empirical experience in past drug development. Our pharmaceutical arsenal is based on the historic legacy of human wisdom over thousands of years.

On the other hand, the rapid progress of genomic study has recently been causing drastic changes in the process of drug discovery. The achievements in genome decoding have elucidated the involvement of genes in various diseases, such as cancer, diabetes, and hypertension. A new strategy called genomic drug discovery, which attempts to use genomic information for the logical and efficient development of new drugs, has been promoted under national projects with university-industry cooperation. The achievements in this direction are expected to provide drugs with better efficacy and less adverse effects, as well as to shorten the time required for the development of new drugs.

Whichever of the various strategies may be used, more and more new drugs will continue to be developed and introduced to the healthcare market. What we need to recognize is the fact that no drugs are free from adverse events. In an aging society, it is now common that aged patients are taking multiple drugs. Frequent coexistence of multiple diseases inevitably leads to the use of multiple drugs. Although this may be an unavoidable choice in some cases, it is well known that the combined use of multiple drugs increases the occurrence of adverse events. Serious adverse drug reactions known to occur in such situations include fulminant hepatitis and agranulocytosis, as well as skin reactions in the form of severe drug eruptions such as Stevens-Johnson syndrome and toxic epidermal necrolysis (TEN). Physicians are notified of the occurrence of serious adverse drug reactions through the issuance of important safety information (Dear Doctor letters). While the system for the feedback of such information to clinical practice has been established, a problem remains regarding the insufficient awareness on the side of physicians receiving it.

Skin reactions, or drug eruptions, represent an important class of adverse drug reactions, because they are easily recognized. Drug eruptions are eruptions caused by the systemic administration (injection, oral use, etc.) of drugs. The reactions occurring in a small minority of treated patients through allergic mechanisms are important. The term drug eruption usually refers to this allergic condition, which develops only in the individuals possessing the cells or antibodies that react to the relevant drug (sensitized to the drug). Because it usually takes 1 or 2 weeks before an immunological condition reacting to the drug is established after the beginning of drug use, symptoms are generally considered to develop after this period. However, some drugs may cause symptoms after a long period of use. When we observe skin reactions, we therefore should not rule out the possibility of drug reactions solely based on the length of drug use or the type of drug administered.

A recent topic attracting much attention is the discovery of a condition called drug-induced hypersensitivity syndrome (DIHS), which is a type of severe drug eruption considered to have close association with a viral activity. Because severe eruptions of this type do not improve after the interruption of the causative drug and may aggravate quickly, prompt initiation of appropriate treatment is essential. Finally, we need to reemphasize the fact that all drugs bear the possibility of causing drug eruptions. Recognizing this fact is important from the standpoint of risk management.

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