

Understanding Radiocontrast Media Hypersensitivity

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An estimated 75 million computed tomography (CT) scans enhanced with iodinated contrast media (ICM) are performed annually worldwide. Introduction of low-osmolar nonionic ICM in place of high-osmolar ionic agents has decreased estimations of the frequency of immediate hypersensitivity reactions (IHRs) from 3.8–12.7% to 0.7–3.1%. However, there still are fatal cases 1 in 100,000–1,000,000 people who were injected with ICM.

Owing to the recent increases in the use of enhanced CT procedures, the frequency of use of low-osmolar nonionic contrast media has gradually increased. ICM can generally be classified into ionic (high-osmolar) and non-ionic (low and iso-osmolar) agents; iohexol, iobitridol, iodixanol, iomeprol, iopamidol, iopromide, and ioversol are the most commonly used iodinated non-ionic contrast media.

IHRs to ICM have traditionally been classified as non-immunologic reactions. However, there is growing evidence supporting the presence of an underlying allergic mechanism in some reactions. Positive skin tests and basophil activation, as well as detection of specific Immunoglobulin (Ig) E in patients with hypersensitivity reactions to ICM indicate that some cases of ICM hypersensitivity could be explained by IgE-associated immunologic mechanisms. The intradermal skin test (IDT) has failed to show its clinical usefulness as a prescreening tool predicting hypersensitivity reactions when performed before a CT scan, irrespective of the patient's history of previous hypersensitivity reactions. However, when the IDT results are positive for the culprit ICM, additional IDTs with other ICMs are needed to select a safe alternative. If the IDT results are negative against the culprit ICM, further IDTs cannot play a role in selecting a safe alternative.

By comparison of the adverse drug reactions (ADRs) considering total usage cases, the incidence and classification of ADRs were different for each contrast medium. A prospective study is needed as the differences in these seven major contrast media may assist in the selection of ICM tailored for each patient.