

Hypersensitivity to iodine-containing contrast media: myths and realities

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BACKGROUND. Intravenous iodine-based contrast media (ICM) are widely used in medical practice worldwide. For instance, in the United States alone, 80 million computed tomography scans were performed in 2019, with ICM used in approximately 37.5 % of them. Adverse reactions to these agents may occur immediately following administration or be delayed. Currently, physicians across various specialties lack sufficient knowledge regarding the clinical presentation, diagnosis, treatment, and prevention of hypersensitivity reactions (HSRs) to ICM.

MATERIALS AND METHODS. A search for available sources of information, their analytical processing, and a discussion of the obtained results.

RESULTS AND DISCUSSION. Mild immediate-type HSRs occur more frequently than delayed ones and manifest as localized urticaria and pruritus, isolated papular eruptions, a sensation of itching or scratching in the throat, nasal congestion, sneezing, rhinorrhea, and conjunctivitis. Moderate HSRs present with signs and symptoms that are more pronounced than those of mild reactions but do not alter vital signs. These may include generalized urticaria, facial swelling, throat tightness, hoarseness, wheezing, and bronchospasm. Such reactions typically require pharmacological treatment and have the potential to progress to severe reactions if the symptoms are not addressed. Severe reactions are characterized by signs and symptoms that are often life-threatening and may lead to permanent disability or death if appropriate measures are not taken. Delayed reactions to ICM are most frequently accompanied by mild cutaneous manifestations associated with T-cell mechanisms. However, clinical cases of severe cutaneous adverse reactions – such as acute generalized exanthematous pustulosis, drug reaction with eosinophilia and systemic symptoms (DRESS syndrome), and Stevens-Johnson syndrome / toxic epidermal necrolysis – have also been described. Diagnosing HSRs to ICM involves obtaining an allergy history and performing skin tests with these agents, with the choice of test depending on the mechanism of the immune-mediated reaction. The management strategy for patients with hypersensitivity to ICM has not yet been fully standardized; currently, it relies on substituting the causative agent with an alternative one and, where indicated, performing rapid desensitization.

CONCLUSIONS. Despite the research findings regarding adverse reactions to ICM, a number of unresolved issues remain that require further study. These include: 1) the necessity of documenting all adverse reactions associated with ICM use in medical records, specifically identifying the causative agent responsible for the reaction; description of the reaction type using terminology employed in the allergology and immunology literature, as well as a description of the treatment received by the patient; 2) organization of the identification of individuals at increased risk of HSRs to ICM and determination of the benefits of risk-reduction measures – specifically premedication with antihistamines and corticosteroids; 3) further determination of the value of a strategy for switching contrast agents; 4) establishment of a national registry of patients with HSRs, particularly to ICM; 5) incorporation of serum tryptase level measurements – following a severe reaction to ICM – into risk stratification for future contrast-enhanced examinations; 6) study of the diagnostic value and potential role of skin testing in selecting safe alternative ICM; 7) further research into the efficacy and safety of rapid ICM desensitization.

KEY WORDS: hypersensitivity, iodinated contrast media, clinical presentation, diagnosis, prevention.