

Drug Allergy



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KEYWORDS

- Drug reaction • Drug allergy • Hypersensitivity • Presentation • Diagnosis
- Treatment • Prevention

KEY POINTS

- Adverse drug reactions can be classified as type A reactions and type B reactions. Type A reactions are defined as predictable, common, dose-dependent effects that are related to the pharmacologic actions of a drug.
- Drug allergy is considered a type B reaction and includes a range of immunologically mediated hypersensitivity reactions with different mechanisms and clinical presentations.
- Drug allergies are unpredictable in presentation and can present as mild as a maculopapular rash or as severe reactions, such as toxic epidermal necrosis or anaphylaxis.
- The diagnosis of drug allergy is made with careful history, physical examination, and sometimes allergy testing.
- A first step in the treatment of a drug allergy is to stop the offending agent. Mild drug allergies can be treated with first-generation antihistamines and topical/systemic steroids, but more severe reactions may require epinephrine and airway management.

INTRODUCTION/EPIDEMIOLOGY

All drugs have the possibility of causing side effects. These side effects are often labeled as “adverse drug reactions.” Adverse drug reactions are common in both the inpatient and outpatient settings. They are between the fourth and sixth leading cause of death and attribute to more than 100,000 deaths in the United States.¹

Adverse reactions can further be further categorized as type A reactions and type B reactions. Type A reactions are defined as predictable, common, dose-dependent effects that are related to the pharmacologic actions of a drug. Type B reactions are unpredictable, uncommon, not dose dependent, and are usually not related to the pharmacologic action of the drug.² Classic examples of type A reactions include bradycardia with propranolol or gastrointestinal bleed with nonsteroidal anti-inflammatory drugs. Approximately 80% of type A reactions fall into this

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category.³ Type B reactions, however, are immune-mediated or allergic-type reactions. These can present with manifestations as mild as a maculopapular rash to a more severe skin reaction such as toxic epidermal necrosis or even life-threatening syndromes like anaphylaxis.

Drug allergy or drug hypersensitivity is considered a Type B reaction, is unpredictable, and includes a range of immunologically mediated hypersensitivity reactions with different mechanisms and clinical presentations.⁴

RISK FACTORS

Drug allergy is a product of interplay of unique factors related to a patient and a drug.⁴ Female individuals are more likely than male individuals to have drug allergies. In the Alergologica 2005 study, the female/male ratio for first-time consults for drug allergy was approximately 2:1. The incidence of self-reported drug allergy was also generally higher in female than in male individuals. Individuals with other disease states, such as human immunodeficiency virus (HIV) or herpes simplex virus are more likely to have drug allergies. Topical, intramuscular, or intravenous routes of drug administration are considered higher risk than oral formulations. Also, individuals receiving drugs for an extended period of time or multiple doses are at higher risk of developing drug allergy than those who receive a single large dose (Table 1).⁵

BASIC PATHOPHYSIOLOGY

As mentioned, adverse drug reactions are often incorrectly categorized and documented as a drug allergy. True drug allergies are immune-mediated reactions and should be distinguished from the many other types of reactions. As mentioned previously, there are 2 main categories of adverse drug reactions: type A and type B (Fig. 1). Most drug reactions are type A, with only approximately 20% or less classified as type B reactions.³

Type A is a drug reaction that is predictable and related to the pharmacodynamics of the drug.

Type B is divided into 4 groups with 1 type of immune-mediated group and 3 types of nonimmune reactions.

Patient Related	Drug Related
Viruses: human immunodeficiency virus, herpes simplex virus ^{2,7}	Route of administration ⁷
Female gender ^{2,7}	Dose related ⁷
Age ⁷	High molecular weight ⁷
Renal disease ²	Hapten-forming drugs, such as penicillin and sulfamethoxazole ⁷
Systemic lupus erythematosus ²	—
Previous exposure ⁷	—
Genetics (leading to idiosyncrasy)	—

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