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Drug Eruptions

A drug eruption refers to an adverse skin reaction triggered by a medication, which can manifest in various ways, mimicking other dermatological conditions. These eruptions can be caused by a wide range of drugs, with antimicrobial agents, sulfa drugs, NSAIDs, chemotherapy agents, anticonvulsants, and psychotropic drugs being common culprits. Drug eruptions are relatively frequent, affecting approximately 2-5% of hospitalized patients and over 1% of the outpatient population. Certain patient populations, such as women, the elderly, and immunocompromised individuals, are at increased risk for these reactions.

The onset of drug eruptions typically occurs within 2 weeks of initiating a new medication or within days if the reaction is due to re-exposure to a previously used drug. Itching is the most common symptom associated with drug eruptions. Given their varied presentation, drug eruptions should be considered in any patient on medications, especially when new drugs have been introduced or dosages altered.

Mechanisms of Drug Eruptions

Drug eruptions can be either immunologically or non-immunologically mediated, with the majority being immunologically driven. Four types of immunologically mediated reactions exist, each characterized by distinct mechanisms:

- ***Type I (IgE-mediated reactions)***: These reactions are immediate and can lead to anaphylaxis, angioedema, and urticaria. Common drugs associated with Type I reactions include insulin and certain antibiotics (e.g., penicillin).
- ***Type II (Cytotoxic reactions)***: These involve the immune system attacking the body's cells, which can result in conditions such as purpura. Drugs such as penicillin and cephalosporins are commonly implicated in Type II reactions.
- ***Type III (Immune complex reactions)***: These reactions are associated with the formation of immune complexes that can lead to vasculitis. Drugs such as quinones and salicylates are often involved.
- ***Type IV (Delayed-type hypersensitivity reactions)***: This type includes contact dermatitis and photoallergic reactions and is most commonly seen with topical medications like neomycin.

Drug eruptions can be triggered by a variety of drugs, with amoxicillin, ampicillin, penicillin, trimethoprim-sulfamethoxazole, cephalosporins, quinidine, and gentamicin sulfate being some of the most frequently implicated.

Diagnosis

A comprehensive medical history is essential in diagnosing drug eruptions. Key components include a detailed medication history, encompassing not only prescription drugs but also over-the-counter medications, vitamins, herbs, and homeopathic treatments. The timing of the eruption in relation to drug initiation or re-exposure is crucial in establishing causality. Additionally, information about the route of administration and dosage can help guide the diagnosis. Previous adverse drug reactions should also be noted, as they may increase the risk of future eruptions.

Clinical Manifestations

Drug eruptions can present with a wide range of morphological features depending on the specific drug and immune response. The most common presentation is a generalized exanthematous or morbilliform eruption. Other patterns include:

- Acneiform lesions (absence of comedones).
- Alopecia.
- Target lesions, as seen in erythema multiforme.
- Erythematous nodules in erythema nodosum.
- Fixed drug eruptions characterized by round, violaceous plaques that fade with macular hyperpigmentation.
- Wheals in urticarial reactions.
- Tender erythematous papules and plaques in drug-induced Sweet's syndrome.

In rare but severe cases, life-threatening drug reactions such as toxic epidermal necrolysis, Stevens-Johnson syndrome, hypersensitivity syndrome, and serum sickness may occur. These reactions are marked by mucosal erosions, blisters, a positive Nikolsky sign, high fever, shortness of breath, and skin necrosis, and require urgent medical attention.

Treatment Approaches

The cornerstone of treatment for drug eruptions is identifying and discontinuing the offending medication as soon as possible. In cases where the diagnosis is uncertain, a biopsy of the affected skin may be performed to help confirm the diagnosis.

For mild drug eruptions, treatment is generally supportive, including the use of antihistamines, topical steroids, and moisturizing lotions to manage symptoms such as itching and inflammation. In more severe cases, hospitalization may be required for further evaluation and management. Intravenous immunoglobulin has shown efficacy in treating toxic epidermal necrolysis, while systemic steroids may be used in cases of hypersensitivity reactions.

Prognosis and Preventive Measures

Most mild drug eruptions resolve within 1-2 weeks without complications, provided the offending agent is discontinued. However, patients should be educated on the importance of avoiding the

drug in the future to prevent recurrence and potential complications. Allergic cross-reactivity should also be considered when prescribing alternative medications.

Conclusion

Drug eruptions represent a significant clinical challenge, given their diverse presentations and potential for serious complications. A thorough medical history, early recognition, and prompt discontinuation of the offending agent are key to effective management. As drug reactions continue to evolve, ongoing research into the underlying mechanisms and newer treatment modalities will be critical for improving patient outcomes.

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