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Drug Hypersensitivity: Experience And Activity Report Of The Pulmonology Department In A Military Setting

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Abstract:
Introduction: Drug allergy is a highly complex issue. Indeed, it is rarely detected during clinical trials in the development of a drug. This is due to a lack of cofactors such as infections, the low proportion of severe reactions, and the lack of tests to detect allergies. Diagnosing drug allergy is essential. Once diagnosed, all healthcare professionals must be vigilant when prescribing or dispensing medication. The issue we will examine in this article concerns drug reactions in active-duty military personnel, highlighting the various aspects of their care and the results of an annual activity report from an allergy department.
Patients and methods: A retrospective study was conducted on 54 patients suspected of having a drug allergy at the pulmonology department of the Mohammed V Military Teaching Hospital in Rabat during 2025.
Results: Cutaneous and mucosal manifestations were observed in 83.3% of cases, respiratory manifestations in 18.5% of cases, digestive manifestations in 18.5% of cases, and neurological signs in 7.4% of cases. Immediate reactions were the most frequent, occurring in 88.8% of cases. Antibiotics were the most frequently tested drug, accounting for 46.2% of cases (25 patients), of which 11 were confirmed allergic.
Conclusion: Antibiotics are the most common cause of hypersensitivity reactions, while immunological mechanisms remain the least frequent.

Keywords: *drugs; allergy; hypersensitivity; military*

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I. Introduction:

Drug hypersensitivity is an increasingly common reason for consultation in allergology. Any medication can trigger a hypersensitivity reaction, in the majority of cases of non-allergic origin involving innate immunity; this is why it is not severe. It is a condition widely encountered in pharmacies, affecting approximately 7% of the general population (1). In order of frequency, this hypersensitivity involves beta-lactams, non-steroidal anti-inflammatory drugs (NSAIDs), and other anti-infective medications (2). In this article, we describe the management of suspected drug hypersensitivity and the experience of our pulmonology-allergology department in a military setting.

II. Methods:

Study design:

This was a retrospective study conducted on 54 patients suspected of having a drug allergy at the pulmonology department of the Mohammed V Military Teaching Hospital in Rabat during 2025.

The Mohammed V Military Teaching Hospital in Rabat is a hospital of the Royal Moroccan Armed Forces that serves military patients and their families residing in the Rabat-Salé-Kenitra, Tangier-Tetouan-Al Hoceima, and Casablanca-Settat regions.

Patients:

54 patients were recruited, both men and women, aged 19 years and older. The patients included in this study presented for allergy consultations outside of an acute allergy crisis and underwent targeted clinical and paraclinical investigations.

Initial reactions to the implicated drugs were classified into several categories based on the type and timing of the reaction, according to ENDA/EAACI recommendations (3). An immediate reaction is defined as one where symptoms occurred less than 1 to 2 hours after drug administration, while a delayed reaction is defined as one where symptoms occurred more than 6 hours after administration of the drug.

In the event of a clinical reaction, it is necessary to assess the degree to which the drug may be responsible. This is based on two criteria: Chronological (Time between taking the medication and the onset of symptoms; Evolution after stopping the medication; Reaction if the medication is restarted) Semiological

(Symptoms suggestive of allergies; Presence of predisposing factors; Other possible explanations for the development of symptoms; Results of additional tests (4).

Once the level of causality is established, the physician can begin the diagnostic process. The diagnosis of drug allergy proceeds differently depending on the time between the reaction and the patient's treatment. If the patient is treated in the acute stage, the physician performs a differential diagnosis to determine whether the symptoms are indeed due to a drug hypersensitivity reaction or to another cause. To do this, the physician relies on: The patient's history of previous exposures, the clinical examination, and blood tests that may show hepatic or renal complications as well as hypereosinophilia (5).

If the diagnosis is made after remission Regarding symptoms, the physician relies on a detailed questionnaire about the event, skin tests, and/or oral food challenges (5).

A standardization procedure for these tests has been established in Europe by ENDA (European Network of Drug Allergy) and EAACI (European Academy of Allergy and Clinical Immunology). These recommendations follow this plan:

- A standardized questionnaire;
- IgE testing (only for immediate reactions);
- Skin prick tests;
- An oral food challenge (only if skin prick tests are negative).

Allergy testing should be performed at least 4 to 6 weeks after the drug reaction, or even 6 months (in the case of a severe reaction), according to ENDA recommendations (5).

There are different types of skin prick tests. The choice of test will depend on the clinical manifestations developed by the patient. In the case of immediate reactions, prick tests or even immediate-reading intradermal tests (IDRs) are performed, and in the case of delayed reactions, patch tests and IDRs are performed.

The drug challenge test is the gold standard for diagnosing a drug allergy (6). It will only be performed if skin prick tests are negative, unavailable, or not validated. If skin tests are negative, it cannot be concluded that there is no allergy. However, it is also used when cross-reactivity is suspected, in order to identify alternative medications within the same class as the suspected drug. Protocols are used for each drug class, in accordance with European guidelines.

It is also essential to ensure that the patient has followed the recommendations after discontinuing certain medications. Specifically, corticosteroids, antihistamines, and beta-blockers must be stopped 5 days before the start of testing.

Before beginning these tests, the patient undergoes a clinical and functional assessment, including blood pressure, heart rate, cardiopulmonary auscultation, oxygen saturation, peak expiratory flow, spirometry, and even skin prick tests with the most common respiratory allergens. Normal results from these tests allow the testing to begin.

Biological tests are used to confirm a doubtful diagnosis. They are not available for all medications (7). A positive result alone is not sufficient to establish a diagnosis (8). They are not routinely used tests in our department due to their unavailability.

Patients seen in the immediate aftermath of the reaction and patients with incomplete records were excluded.

Data collection:

Data were collected from a review of patients' medical records. Collection was carried out by pulmonologists and resident physicians assigned to the pulmonology department.

Data management:

Data entry and validation were performed using Excel.

Age, weight, and body mass index were expressed as mean ± standard deviation (SD).

Sex and test results were expressed as a percentage (%) of the sample size.

III. Results:

A total of 54 patients meeting the criteria were included.

In our study population, the following were calculated: mean age 33.2 ± 11.5 years, mean weight 60 ± 25 kg, and mean body mass index (BMI) 23 ± 1.5 kg/m².

Females were the predominant sex, representing 74.07% (40 patients) of the study population.

A personal and/or family history of known allergies was present in 37.03% (20 patients) of the study population.

Cutaneous and mucosal manifestations (pruritus, urticaria, etc.) occurred in 83.3% of cases, respiratory manifestations (dyspnea, chest pain, etc.) in 18.5% of cases, digestive manifestations in 18.5% of cases, and

neurological signs in 7.4% of cases. Immediate reactions were the most frequent, occurring in 88.8% of cases (48 patients), and delayed reactions in 11.2% of cases (6 patients).
Prick tests with respiratory allergens in the study population were positive in 14.8% of cases.

Antibiotics were the most frequently tested medications, accounting for 46.2% of cases (25 patients) (penicillins, cephalosporins, rifampicin): 7 allergies were confirmed by intradermal testing (IDT) and 4 by provocation testing.

NSAIDs were the second most common allergen, occurring in 37.03% of cases (20 patients), but only 4 cases were confirmed by provocation testing.

Other medications (anticonvulsants, anesthetics, etc.) were involved in 16.6% of cases (9 patients), with 2 cases confirmed (1 by IDT and 1 by provocation testing).

IV. Discussion:

Hypersensitivities to drugs in our study were suspected in the majority of cases in women (74.07% of cases), the most frequent manifestations are early after administration of the drug in question (88.8% of cases) and antibiotics are the drugs ranked in 1st position responsible for these reactions (46.2%), the immunological mechanism is confirmed in only 29.6% of cases (16 patients in total).

Immunoallergic hypersensitivities account for 10% of drug hypersensitivities (9). They involve the patient's adaptive, humoral, or cellular-mediated immunity. Their onset time varies. Without a rigorous approach, an allergy diagnosis may be made prematurely, depriving the patient of effective or even less expensive treatment. Conversely, allowing the use of a drug that actually causes an allergic hypersensitivity reaction exposes the patient to potentially dramatic consequences. Hypersensitivity affects more than 7% of the population, and reactions of immunological or non-immunological origin represent 15 to 20% of all drug side effects (10, 11). The military comprises hundreds of professions. Ministerial instructions define the fitness criteria. Food, hymenoptera, or drug allergies can be grounds for permanent or temporary, partial or total unfitness for service. Decisions depend on the timing of the request (at recruitment or during a career or contract), the branch of service, rank, and the patient's position. Suspected drug allergies are common, although less than a quarter of these allergies are confirmed (12), and only 12% of suspected beta-lactam allergies in children are proven (13). Drug allergies are generally not a cause of unfitness for service in the military. It remains essential to conduct an assessment following any event or history of drug-related hypersensitivity to determine the immunological or non-immunological etiology and to determine whether the drug in question, or an alternative, can be used. The most frequent situation is a history of penicillin hypersensitivity in childhood (14).

V. Conclusion:

Although most medications can cause allergic reactions, severe reactions are rare but are a major concern for clinicians and healthcare manufacturers due to their impact on morbidity and mortality. This highlights the importance of a rigorous diagnostic approach and personalized care to preserve patients' functional and vital prognosis, improve their quality of life, and safeguard their future in the military field.

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