

## Analysis for Diagnosing Quinolone-Induced Hypersensitivity

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### DESCRIPTION

Quinolones, a class of antibiotics used to treat various bacterial infections, are known to induce Hyper Sensitivity Reactions (HSRs) in some individuals. These reactions can range from mild skin rashes to severe, life-threatening conditions such as anaphylaxis. Quinolones are the second most common antibiotic class associated with HSRs, with an increase in the number of reported cases in recent years. This study aimed to analyze the clinical characteristics of patients who experienced hypersensitivity reactions to quinolones and assess diagnostic methods for these reactions.

A total of 128 patients with confirmed hypersensitivity reactions to quinolones and 42 patients who were tolerant to these drugs were included in the study. The patients were evaluated over a period spanning from 2005 to 2018 and diagnoses were made based on clinical history, Skin Tests (STs), Basophil Activation Tests (BATs) and Drug Provocation Tests (DPTs). Anaphylaxis, a severe allergic reaction, was the most frequent manifestation of Immediate hypersensitivity Reactions (IRs), with moxifloxacin identified as the most common culprit drug. The patients were evaluated on average 150 days after the reaction and the results of STs and BATs were used to assess the presence of hypersensitivity.

Among patients who underwent skin tests and basophil activation tests, 40.7% and 70% of patients, respectively, had positive results. The study also involved conducting drug provocation tests on 48 cases, which yielded varying results depending on the drug involved. For example, when moxifloxacin was identified as the cause of the hypersensitivity reaction, 62.5% of patients also reacted to ciprofloxacin in the DPT, while none of the patients showed a reaction to levofloxacin. This information is useful for identifying safe alternative quinolones for patients with hypersensitivity to specific quinolone agents.

The risk of hypersensitivity reactions was significantly higher in patients who had experienced anaphylaxis induced by moxifloxacin, with the likelihood being 96 times greater compared to individuals who had nonimmediate reactions or reactions to other quinolones. In patients who reported

immediate reactions to quinolones, the risk was 18 times higher. These findings emphasize the importance of considering the type of reaction and the specific drug involved in the diagnosis and management of quinolone-induced hypersensitivity.

Although quinolones are effective antibiotics and frequently prescribed for treating infections, the occurrence of hypersensitivity reactions is an important health concern. While most adverse reactions to quinolones are mild and affect the gastrointestinal or central nervous system, the incidence of severe reactions, including anaphylaxis and other cutaneous reactions, has been increasing. This trend correlates with the rising use of quinolones in clinical practice over the past few decades.

Quinolones are associated with a low but significant risk of hypersensitivity, with a notable number of cases involving patients who are also allergic to beta-lactam antibiotics. These patients are at a higher risk of developing hypersensitivity reactions to quinolones, further limiting the available treatment options for infections. In fact, patients allergic to beta-lactams are 17 times more likely to have a hypersensitivity reaction to quinolones. This presents a challenge in clinical practice, as the restricted range of antibiotics available for such patients can result in poor outcomes for infections that require treatment with alternative antibiotics.

BAT has shown potential as a diagnostic tool for immediate reactions to quinolones, with higher sensitivity than skin tests. However, some studies have shown conflicting results, which indicates that more research is needed to establish BAT as a standard diagnostic method. DPTs, considered the gold standard for diagnosing hypersensitivity to drugs, carry some risks and should be performed with caution, particularly in patients with a history of severe reactions.

### CONCLUSION

Hypersensitivity reactions to quinolones are an increasing concern in clinical practice, particularly due to their rise in incidence and the complexity of diagnosis. Clinical history is critical in identifying potential reactions, while basophil activation tests provide higher sensitivity than skin tests. Drug

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provocation tests can help determine safe alternative quinolones for patients but must be used carefully. The findings of this study highlight the importance of developing better diagnostic

tools and treatment strategies to manage quinolone-induced hypersensitivity and ensure the safety of patients requiring these antibiotics.