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Commentary

Adverse Reactions and their Minimal Impact on Tuberculosis Preventive Therapy

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DESCRIPTION

Preventive treatment regimens, such as those using isoniazid and rifapentine, have proven to be highly effective in reducing the risk of latent TB infection progressing to active disease. However, concerns about potential Adverse Drug Reactions (ADRs) often arise when implementing such treatments. Despite these concerns, recent studies suggest that ADRs to isoniazid and rifapentine are not significantly associated with treatment discontinuation, highlighting the feasibility of these regimens for TB prevention. Isoniazid and rifapentine are foundation medications in Tuberculosis (TB) prevention. Their combination in shorter regimens, such as the 3-month once-weekly 3HP therapy, has gained popularity due to its effectiveness and improved adherence compared to longer regimens. These medications work synergistically: isoniazid inhibits the synthesis of mycolic acid, essential for bacterial cell wall formation, while rifapentine targets bacterial RNA polymerase, effectively halting TB replication. The shorter duration and simplified dosing of regimens like 3HP make them more practical for large-scale implementation in diverse populations. These advantages not only improve patient compliance but also reduce the logistical challenges faced by healthcare providers. Furthermore, the low association of ADRs with treatment discontinuation underscores their safety profile, making them suitable for widespread use in public health programs. As such, 3HP and similar regimens hold significant potential in advancing global TB prevention efforts, particularly in high-burden settings.

Adverse drug reactions and treatment discontinuation

As with any medication, the use of isoniazid and rifapentine can lead to ADRs. Commonly reported reactions include, Hepatotoxicity is an elevated liver enzyme levels are a frequent concern, especially with isoniazid. Rifapentine can occasionally cause fever, chills, and malaise. Hypersensitivity reactions such as skin rashes, itching, and more severe allergic responses may occur. Gastrointestinal issues like nausea, vomiting, or abdominal discomfort can affect some individuals. While these ADRs are usually mild to moderate, their potential to disrupt treatment adherence has been an essential area of investigation. Recent research has provided encouraging evidence that ADRs to isoniazid and rifapentine are not a major driver of treatment discontinuation in TB prevention programs. Key findings include:

Low frequency of severe ADRs: The majority of ADRs associated with the 3HP regimen are mild and manageable. Severe reactions leading to treatment cessation are rare.

Effective monitoring and management: Regular monitoring for ADRs, including liver function tests and patient education, enables healthcare providers to address symptoms promptly, minimizing their impact on adherence.

High adherence rates: Studies have consistently shown high completion rates for the 3HP regimen, even among populations with a higher risk of ADRs, such as individuals with HIV or pre-existing liver conditions.

Patient centered approaches: Tailored interventions, such as counseling and adherence support, empower patients to continue treatment despite mild ADRs.

Implications for TB prevention programs

The finding that ADRs do not significantly influence treatment discontinuation has several implications. Healthcare providers can confidently recommend shorter regimens like 3HP, knowing that ADRs are unlikely to compromise treatment success. Public health programs can scale up the use of isoniazid and rifapentine combinations without undue concern about ADR-related dropouts. Emphasizing patient education and regular follow-ups can further enhance treatment adherence and outcomes. Additionally, this finding supports the development of simplified treatment protocols, reducing the burden on healthcare systems while maintaining efficacy. It highlights the importance of robust pharmacovigilance to monitor and manage ADRs effectively without deterring patients. By addressing concerns proactively through counseling, providers can build trust and encourage sustained adherence. Furthermore, scaling

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up shorter regimens can improve cost-effectiveness and resource allocation in public health initiatives, ultimately broadening access to care and improving overall health outcomes.

CONCLUSION

The effective prevention of TB through isoniazid and rifapentine regimens remains a foundation of global TB control efforts. While ADRs are an expected aspect of any pharmacological intervention, their limited impact on treatment discontinuation underscores the practicality and safety of these regimens. By addressing ADRs proactively and supporting patients through their treatment journey, healthcare providers can ensure the continued success of TB prevention programs, ultimately contributing to the global effort to eliminate TB as a public health threat.