Case Report

Steven Johnson Syndrome and Toxic Epidermal Necrolysis from Nitrofurantoin

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ABSTRACT

This case report details a severe and rare adverse reaction to nitrofurantoin, an antibiotic commonly prescribed for urinary tract infections. A 32-year-old female patient, initially treated for a UTI, developed a painful, widespread rash, respiratory distress, and deranged blood parameters. Despite a prescription for a 5-day course, she continued taking nitrofurantoin for nearly 30 days. Her condition deteriorated rapidly, with the development of erythematous skin lesions, oral and ocular mucosal involvement, and elevated liver enzymes. A skin biopsy confirmed a diagnosis of Steven Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN) overlap, potentially triggered by nitrofurantoin. This case highlights the severe adverse drug reaction associated with nitrofurantoin, underlining the importance of early recognition, medication discontinuation, and multidisciplinary care for improved outcomes. It also emphasizes the necessity of patient education on proper medication use and adherence to prescription guidelines. The report ultimately stresses the importance of raising awareness among healthcare professionals and patients to enhance healthcare outcomes and promote responsible antibiotic use.

Keywords: Nitrofurantoin, Adverse drug reaction, Steven Johnson Syndrome, Toxic Epidermal Necrolysis, Pneumonitis.

INTRODUCTION

Nitrofurantoin (antibiotic) is commonly used and preferred to treat lower urinary tract infections (UTI) due to its relatively safe adverse effects profile.[1] However, it is important to recognize the rare, yet serious adverse effects profile of this medication.[2] One of the rare adverse reactions is the development of Steven Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN) from nitrofurantoin.[1,2]

Patient details and chief complaints

A 32-year-old female patient resident of Balaghat was brought by relatives to GMC Nagpur with chief complaints of respiratory distress, deranged blood parameters and urinary output, poor oral intake and painful rashes spreading all over her skin. She had history of UTI one month back and her urine culture was suggestive of E. coli infection for which she was prescribed tablet Nitrofurantoin 100mg BD for a period of 5 days**.**

Medical history

She was febrile with burning micturition and though her fever subsided, urinary complaints did not subside; so, the doctor continued nitrofurantoin for a period of 5 more days. Later the patient self-medicated and continued taking nitrofurantoin for a period of almost 30 days after which she developed multiple erythematous, well defined, hyperpigmented lesions with multiple areas of superficial dry crusted erosions all over her body

Physical Examination

The patient was febrile (101.5°F) with widespread erythematous macules, papules, and target-like lesions on her skin and the rash was notably present on her face, trunk, back and extremities. She also exhibited oral mucosal involvement with painful erosions and ulcerations, Ophthalmic examination revealed conjunctival and ocular mucosal inflammation.

Diagnostic Tests

Her Report of Urine Culture was suggestive of E. coli infection and a report of deranged CBC and decreased Urine Output was also presented. Laboratory results were notable for leukocytosis (white blood cell count: 14,500/µL) and elevated liver enzymes (aspartate aminotransferase: 98 U/L, alanine aminotransferase: 115 U/L). Skin biopsy was performed showing epidermal detachment, necrosis, and lymphocytic infiltration consistent with a diagnosis of Stevens-Johnson Syndrome

Diagnosis

The patient was diagnosed with Steven Johnson Syndrome and Toxic Epidermal Necrolysis overlap suspected secondary to Nitrofurantoin

Management

The patient was immediately admitted to MICU where high-risk consent was taken and the offending medication nitrofurantoin was discontinued. Supportive care included intravenous fluids, wound care, pain management, and meticulous monitoring of vital signs. She was also started on systemic corticosteroids i.e., Inj. Dexamethasone 4mg BD to mitigate the inflammatory response and promote healing and workup for cyclosporine was also done. Central Venous Catheter was inserted, Ryle's tube feeds were given according to input/output monitoring and antibiotics were also started. She was managed by a multidisciplinary team, including dermatologists, ophthalmologists, ENT specialists and intensivists.

Progress and Outcome

The patient's vitals were stable maintaining O_2 saturation of 92% with tachypnea and her Dermatology call was again done and patient was attended for skin cleaning and care. Patient was given 2 units of platelet concentrations and 1 Unit of packed red cells due to deranged blood parameters. Her ENT, Ophthalmology and Chest TB opinion was done. On 15/1/23, the patient gasping and Non-Invasive Ventilation (NIV) was done by an Anesthetist. Consent from relatives was taken and emergency intubation was done as patient did not maintain spO_2 on NIV support, but Post Intubation patient went into Cardiorespiratory Arrest and CPR of 3 cycles was given but patient could not be revived and was declared dead.

DISCUSSION

The case highlights the potentially severe adverse reaction of SJS and TEN associated with use of Nitrofurantoin so, it is important for healthcare providers to be aware of this potential complication. Early recognition, prompt discontinuation of the offending medication and multidisciplinary management are crucial in improving outcomes of patient with SJS and TEN. Antibiotic sensitivity testing to check if the patient was sensitive to nitrofurantoin should have also been done for this patient. This case also underscores the importance of cautious and appropriate use of over-the-counter medication. Though Nitrofurantoin is a commonly used Antibiotic for UTI, it may cause fatal reactions like hemolytic anemia, acute respiratory distress syndrome, acute hepatitis, SJS, TEN and chronic pulmonary reactions like pneumonitis etc. particularly when taken for extended duration or excessive doses. The patient should have been educated about recommended dosage, potential adverse effects and the importance of adhering to dosage guidelines. In many countries, antibiotics are prescription-only medications due to their potential misuse and adverse effects. In INDIA antimicrobial agents (AMA) comes under schedule H and H1 i.e. prescription-only drugs. Thus, Pharmacists also should be advised not to dispense antibiotics without the prescription of a Registered Medical Practitioner as well as prohibit dispensing of medicine on outdated prescriptions.

CONCLUSION

This case demonstrates that although nitrofurantoin has good safety profile and is known to be relatively well tolerated, clinicians should be aware of the severe adverse drug reactions, including a potential SJS, TEN and pneumonitis from nitrofurantoin use. It is also important to closely observe the vital signs, parameters of pulmonary function and chest X-Ray of patients on long term nitrofurantoin therapy and do antibiotic sensitivity testing in patients needing long term treatment with specific antibiotic. Knowledge of anti-microbial stewardship program is necessary, and this information should be used to educate patients regarding self-medication (especially with antibiotics). Thus, creating awareness of potential adverse effects will ultimately enhance healthcare outcomes.

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