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Case Report

Fixed Drug Eruption Secondary to Doxycycline: A Case Report

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ABSTRACT

Introduction: A fixed drug eruption (FDE) is a unique skin allergic reaction that is characterised by recurrence of lesions at the same spot every time a specific drug is ingested. Generally, presents as well- defined red, violet, or dark brown patches or plaques. Frequently seen with some antimicrobial agents like tetracyclines, Sulfamethoxazole and others like NSAIDs. The lesions regress after cessation of the drug, but leave a lingering, permanent, dark brown hyperpigmentation.
Patient concerns: A 58-year-old male with the complaint of ulceration of mouth, dusky red annular patches over forearms, hand, palms and soles, along with redness of the scrotal region was admitted to the Dermatology ward of Silchar Medical College and Hospital. The lesions started 2 days after the intake of Tab. Doxycycline and gradually progressed in size and shape.
Diagnosis: The patient was diagnosed with Fixed drug eruption secondary to doxycycline based on his drug history, clinical manifestations, and laboratory test results.
Interventions: The patient was administered intravenous glucocorticoids along with Inj. Ceftriaxone and the patient's condition improved after treatment.
Outcomes: After receiving therapy, the patient's condition slowly improved, the lesions faded, and the burning sensation subsided.
Conclusion: Case reports are crucial as they highlight the regional prescribing patterns and the ADRs that can follow. Established protocols for diagnosing and managing Fixed Drug Eruption (FDE) in India are largely derived from dermatological clinical studies and case reports. Also, case reports can help in an in-depth understanding of the reaction, along with the variety of its clinical manifestations. Hence, a case report on fixed drug eruption secondary to doxycycline has been presented.

Keywords: *Fixed Drug Eruption, Doxycycline, Case Report, Adverse Drug Reaction.*

INTRODUCTION

As the name suggests, fixed drug eruption (FDE) is a cutaneous allergic reaction that characteristically recurs at the same site(s) on re-exposure to the medication or other chemical agent. It basically is a delayed Type IV hypersensitivity reaction, where the initial phase is mediated by memory CD8+ T- cells at the dermo-epidermal junction, which leads to the release of interferon-gamma when the patient again receives the offending medication, causing epidermal basal layer damage[1]. FDE is a cutaneous adverse drug reaction (CADR) with clinical manifestations varying from single spots to severe, widespread blistering. It can be seen with many antibiotics such as trimethoprim-sulfamethoxazole, penicillin (amoxicillin, ampicillin), fluoroquinolones, tetracycline (minocycline, doxycycline), erythromycin and some other groups of medications such as nonsteroidal anti-inflammatory drugs (NSAIDs; diclofenac sodium, aspirin, naproxen, and ibuprofen),

antiepileptics, and some psychotropic medications[2]. In a study by Dr. S. Jareena Begum et al., norfloxacin was found to be most frequently associated with FDE [3], but in some studies, it is mentioned that Sulfamethoxazole is responsible for the largest number of FDE worldwide.[4] FDE is often reported as the second or third most common skin manifestation of adverse drug events, accounting for roughly 16% to 21% of all drug-induced skin reactions. In India, studies indicate that FDE constitutes between 2.5% to 22% of all cutaneous drug reactions.[5]

FDE typically manifests as well-demarcated, erythematous to violaceous macules or plaques that may evolve into bullous or erosive forms in severe cases, and there is residual hyperpigmentation, which means the lesions often resolve with characteristic persistent grayish-black, brown, or slate-blue hyperpigmentation that can last for months or years[6]. The different variants of FDE are generally classified based on clinical morphology into localised pigmenting, bullous, non-pigmenting, mucosal, and generalised forms, of which Localised Pigmented FDE being the most common[7]. Most commonly seen in middle-aged individuals with a slight male predominance, which could be due to higher drug exposure[8]. Tetracyclines are notorious for causing FDE, with Doxycycline being frequently reported in modern cases, often leading to genital FDE. Tetracyclines stimulate resident memory T-cells in the epidermis, and upon re-exposure, these T-cells trigger rapid inflammation, leading to cell death and blistering at the same spot[9]. Due to the variety in clinical manifestations and severity of FDEs, case reports become essential. They can highlight rare presentations, identify new causative agents and serve as valuable educational tools for clinicians and researchers. Also very few case reports on doxycycline-induced FDEs have been reported so far.

Ethics and methods

1. Written informed consent was obtained from the patient before the collection of personal details.
2. All procedures described in this case report involving the patient were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

CASE PRESENTATION

A 58-year-old male patient was admitted to the Dermatology ward of Silchar Medical College and Hospital on 21 February 2026 with the chief complaint of multiple raw and ulcerated leisons over the lips, inner aspect of both cheeks, multiple annular dusky flat leisons on both forearms, hands and soles, along with redness and swelling over the genital region involving scrotum and penis since last 5 days.

The lesions started to appear 2 days after intake of Tab Doxycycline 100mg for the treatment of redness and discharge from both eyes seven days ago. The lesions were preceded by fever, which started on the same day that the medicine was started. The fever was sudden in onset and gradually progressive in nature.

Two days following the fever, multiple ulcerated lesions started to appear first over the inner aspect of both cheeks, which gradually progressed to cover the lips and tongue, and were accompanied by a burning sensation and difficulty in swallowing.

Within the next day, he developed a purplish-red annular lesion over the inner aspect of his right foot, which gradually progressed in size and developed into a fluid-filled blister. This blister was associated with a burning sensation and itching. Eventually, his forearms, legs, hands, soles and genital region were covered with multiple small dusky and itchy lesions with erythematous border in a span of 3 days.

The patient provided a similar history of developing ulcerations and annular lesions one month ago after the intake of Tab Doxycycline, which subsided after taking Tab Levocetirizine.

This time, the lesions did not subside even after stopping the Tab. Doxycycline and taking levocetirizine, and that is why he was admitted to the Dermatology ward. There was no history of chronic hypertension, Type 2 Diabetes Mellitus or any autoimmune diseases. Laboratory parameters were within normal range except for mild monocytosis.

In the ward, he was administered Inj. Ceftriaxone 1g twice daily for 5 days and Inj. Dexamethasone 1cc IV once daily for 5 days, along with concomitant medications such as Tab. Montelukast- levocetirizine, cotrimoxazole mouth paint and betamethasone cream. The lesions started to regress, and the burning sensation subsided. The patient was discharged after 5 days on Tab. Prednisolone 10 mg and Tab Levocetirizine 5mg. He was followed up after two weeks, and the lesions disappeared, but mild pigmentation persisted.

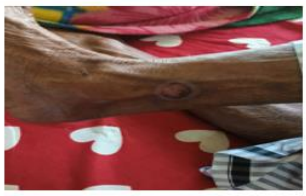

Fig.1: Single hyperpigmented lesion over the right foot

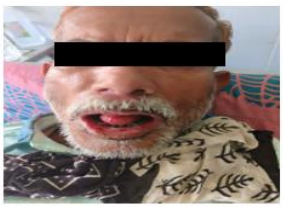

Fig.2: Oral ulceration

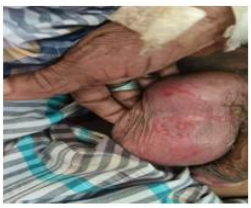

Fig.3: Redness over scrotal region

DISCUSSION

Tetracyclines are a major class of broad-spectrum antibiotics derived from Streptomyces soil bacteria. The effectiveness of tetracyclines against a wide range of microorganisms made it one of the most prescribed antibiotics in the 1950s[10]. There are three subtypes of tetracyclines: naturally occurring, semi-synthetic, and newer agents. Naturally occurring tetracyclines include tetracycline and demeclocycline. Semi-synthetic agents are minocycline and doxycycline, and newer agents include tigecycline (subclass glycylcycline), eravacycline, and omadacycline[11].

Tetracyclines inhibit bacterial growth by reversibly binding to the 30S ribosomal subunit. This action blocks the binding of aminoacyl-tRNA to the mRNA-ribosome complex, preventing protein synthesis. Hence, tetracyclines prevent the addition of new amino acids to the peptide chain during bacterial protein synthesis[12]. Doxycycline is a water-soluble, broad-spectrum tetracycline antibiotic which is widely used because of its effectiveness against a wide range of gram-positive and gram-negative bacterias.

Doxycycline is generally prescribed for skin infections, sexually transmitted infections such as chlamydia, syphilis, gonorrhoea, and pelvic inflammatory disease[12]. It is also one of the alternative drugs when penicillin is contraindicated. It is known to cause FDEs probably by acting as a hapten which preferentially binds to basal keratinocytes, eliciting an inflammatory response. Due to this inflammatory response, cytokines interferon-gamma and tumour necrosis factor-alpha are released, which leads to migration and activation of CD8+ T cells in the epidermis, ultimately causing widespread tissue damage[13].

Diagnosis of FDE due to Doxycycline is primarily clinical, supported by a history of recurrence and specific timing, and is often confirmed by histopathology or challenge tests. In our case report, the patient was male, and recent studies and case series suggest that doxycycline-induced Fixed Drug Eruption (FDE) is observed more frequently in males, especially in males suffering from sexually transmitted infection (STI) management and pre-exposure prophylaxis (DoxyPEP)[14]. Interestingly, a case series of 2025 identified thirteen male patients (mean age: 32.5 years) with doxycycline-induced FDE, with most (84.6%) being men who have sex with men (MSM) receiving the medication for STI treatment or prophylaxis[15].

Treatment of these types of FDE includes immediate discontinuation of the drug, symptomatic relief with corticosteroids, oral antihistamines and strict avoidance of doxycycline and related Tetracyclines[9]. In our case report, the patient was treated with IV steroids, which is different from the case report by Anandan I. et al., where the patient was given a topical steroid, which could be due to the severity of the reaction[16]. Steroids are given to dampen the intense inflammatory response, reduce tissue damage, and accelerate healing.

CONCLUSION

FDE is the most common drug-induced rash in India, and one of the reasons could be the easily accessible, over-the-counter medication. It can mimic severe conditions such as Stevens-Johnson Syndrome (SJS) or Toxic Epidermal Necrolysis (TEN), depending on the severity of the reaction. Case reports of Fixed Drug Eruption become important because they help identify emerging, potentially dangerous drug reactions—such as Generalised Bullous FDE, which in turn increases the clinical insight and aids in medication safety awareness.

Physicians should be careful while prescribing medications like doxycycline, which have a propensity to cause FDE and drug allergy cards should be appreciated. A drug allergy card is a portable medical alert tool that lists specific medication allergies of an individual patient[17]. It is one of the initiatives that could be encouraged as it helps communicate the essential medical history and reduces the risk of prescribing medications that could be harmful to the patient.

REFERENCES

1. Adern-Jones MR, Lee HY. Benign cutaneous adverse reactions to drugs. In: Griffiths C, Barker J, Bleiker T, Chalmers R, Creamer D (eds). Rook's Textbook of Dermatology, 9th edn. Wiley Blackwell, 2016: pp118.11–14.
2. Doshi BR, Chougule NS, Belgaumkar VA, Chavan RB. Fixed drug eruption secondary to doxycycline. Indian J Drugs Dermatol 2016;2:124-7.

3. Dr. S. Jareena Begum, Dr. Shifa Mullammada, Dr. Lekkala Sreedevi.A COMPREHENSIVE EXPLORATIONOF FIXED DRUG ERUPTIONS WITH SPECIAL FOCUS ON BULLOUS FIXED DRUG ERUPTION AMONG PATIENTS ATTENDING TERTIARY CARE CENTER. Eur J
1. Cardiovasc Med. 2025; 15(12):178-183.
4. Fixed drug eruption (FDE): changing scenario of incriminating drugs. Sehgal VN, Srivastava G. Int J Dermatol. 2006;45:897–908. doi: 10.1111/j.1365-4632.2006.02853.x
5. Patel TK, Thakkar SH, Sharma D. Cutaneous adverse drug reactions in Indian population: A systematic review. Indian Dermatol Online J. 2014 Dec;5(Suppl 2):S76-86. doi: 10.4103/2229- 5178.146165. PMID: 25593813; PMCID: PMC4290186.
6. Lee AY. Fixed drug eruptions. Incidence, recognition, and avoidance. Am J Clin Dermatol. 2000;1(5):277-285.2000 Sep-Oct;1(5):277-85. doi: 10.2165/00128071-200001050-00003
7. Agarwal A, Das A, Panda M, Kumar P. Uncommon variants of fixed drug eruption. Indian J Dermatol Venereol Leprol 2023;89:475-81.
8. N'Diaye A, Traore A, Barro-Traore F, et al. Fixed drug eruption in tropical settings: Clinical and etiological features. Pan Afr Med J. 2020;37:187.
9. Podder I, Chandra S, Das A, Gharami RC. Doxycycline Induced Generalized Bullous Fixed Drug Eruption. Indian J Dermatol. 2016 Jan-Feb;61(1):128. doi: 10.4103/0019-5154.174197. PMID: 26955169; PMCID: PMC4763688.
10. Cowen, David L., and Alvin B. Segelman, eds. Antibiotics in Historical Perspective. Rahway, N.J.: Merck, 1981.
11. Jeffrey C. Pearson, Eric Gillett, Nora Danielle Gadri, Brandon Dionne, Tetracyclines, the old and the new: A narrative review, CMI Communications, Volume 2, Issue 1,2025,105059, ISSN 2950-5909,https://doi.org/10.1016/j.cmicom.2025.105059
12. Parmar M, Patel P. Doxycycline Hyclate. [Updated 2025 Sep 15]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 Jan-https://www.ncbi.nlm.nih.gov/books/NBK555888/
13. Smoller BR, Luster AD, Krane JF, Krueger J, Gray MH, McNutt NS, et al. Fixed drug eruptions: Evidence for a cytokine-mediated process. J Cutan Pathol 1991;18:13-9.
14. Jhaj R, Chaudhary D, Asati D, Sadasivam B. Fixed-drug Eruptions: What can we Learn from a Case Series? Indian J Dermatol. 2018 Jul-Aug;63(4):332-337. doi: 10.4103/ijd.IJD_481_17. PMID: 30078879; PMCID: PMC6052757.
15. Clément Brun, Marie Danset, Romain Salle, Victor Bourdenet, Louise Jaulent, Florence Hacard, Marine Fargeas, Brigitte Milpied, Elisa Goujon, Valérie Beaulieu, Timothy Capeliez, Sébastien Fouéré, Matthieu Godinot, Marie Tauber, Doxycycline-induced fixed drug eruption: A case series highlighting a dermatological concern in antimicrobial stewardship, International Journal of Infectious Diseases, Volume 164,2026,108335, ISSN 1201-9712,https://doi.org/10.1016/j.ijid.2025.108335.
16. Anandan I et al. Int J Basic Clin Pharmacol. 2018 Nov;7(11):2264-2267
17. Mulkalwar S, Chitale S, Dandage P, Bapat S, Tilak AV, Patil S. Evaluation of the Effectiveness of the Adverse Drug Reaction Alert Card System in Preventing the Recurrence of Adverse Drug Reactions. Cureus. 2024 Jul 16;16(7):e64653. doi:10.7759/cureus.64653. PMID: 39149672; PMCID: PMC11326754