

RESEARCH ARTICLE

OPEN ACCESS

Anti-craving Property of Chlorpromazine in Pentazocine addiction among sickle cell disease patients: A Case Series

Falade J¹[ID](#), Osho PO²[ID](#), Ajayi AA³[ID](#), Ogungbemi AO³[ID](#), Dare RF⁴[ID](#), Akinnuoye AA⁵[ID](#), Sajo S⁵[ID](#)

¹*Mental Health Unit, Department of Internal Medicine, Faculty of Clinical Science, University of Medical Sciences Ondo, Ondo State Nigeria*

²*Department of Hematology, Faculty of Basic Clinical Sciences, University of Medical Sciences Ondo, Ondo State Nigeria*

³*Department of Family Medicine, Osun State University Osogbo, Osun State, Nigeria*

⁴*Department of Mental Health, State Specialist Hospital, Osogbo, Osun State, Nigeria*

⁵*State Neuropsychiatric Hospital, Akure, Ondo State, Nigeria*

Submitted: 14th May 2023

Accepted: 14th August 2023

Published: 31st December 2023

[ID](#): Orcid ID

Abstract

Background: Opioids are useful in the management of vaso-occlusive crisis among Sickle Cell Disease patients; however, there is a need to search for drugs that can ameliorate the withdrawal symptoms without causing further dependence.

Case presentations: Three patients living with Sickle cell disease abusing Pentazocine were managed with Tab Chlorpromazine 100mg twice daily for three weeks and had a significant reduction in the level of craving and also experienced improved sleep. Chlorpromazine demonstrates a high affinity for dopamine (DA) receptors and acts as a receptor antagonist by inhibiting adenylate cyclase activity.

Conclusion: Chlorpromazine was found to be useful in the management of cravings associated with Pentazocine addiction.

Keywords: Sickle Cell Disease, Dependence, Pentazocine, Chlorpromazine, Case Series

Background

Sickle-Cell Disease (SCD) affects many systems of the body and is associated with occurrences of acute illness, pain and organ damage (1). In Nigeria, Pentazocine, an Opioid is commonly used in the management of vaso-occlusive (VOC) crisis. It controls pain, improves efficient capacity, and diminishes hospitalization in most SCD patients but has an addictive tendency (2).

Case presentations

Case one: Mr I D is a 47-year-old Nigerian Senior Administrative officer living with sickle cell disease (HbSS). He presented on the 10th of July 2021 with a two-year history of Pentazocine self-injection.

He started abusing Pentazocine injections after being treated for VOC crisis and Chronic Osteomyelitis in a private hospital. During the admission, he was given Pentazocine for three months. He later faked the bone pain in other to

Correspondence:

Falade, Joshua

Mental Health Unit, Department of Internal Medicine, Faculty of Clinical Science,
University of Medical Sciences, Ondo,

Ondo State Nigeria

+2348034394978, Jfalade@unimed.edu.ng

enjoy the euphoric effect of Pentazocine during the admission.

The patient started the self-administering of pentazocine when he was discharged. The most ideal site of self-injection was the left cubital fossa accurately using the cubital veins. He usually wore a long shirt so that the injection site will be hidden from his siblings and colleagues. While at work or amongst friends, he often sneaked to a private place to inject himself.

Many times he went to the emergency room of a nearby Hospital, picked up prescription sheets (without permission) to prescribe pentazocine using unauthorized signatures and procure it from different pharmaceutical shops; He spent roughly one thousand naira (about 1.42 US Dollar) per day on Pentazocine alone. He obtained this money from his salary. Each injected intravenous dose of 30mg lasts for about four hours. He claimed that the urge for the drug has taken an important effect over other activities like attending to family needs and going to workplaces and religious places. Typically, the first dose for the day would be taken first thing in the morning, another dose in the afternoon, and the last dose would be taken just before bedtime. He took an average of three ampoules per dose. This is despite his awareness that he was already dependent.

On mental state examination, the patient was well-kept, cooperative and restless. There were no hallucinatory experiences or behaviour. There was no abnormality of stream, form, content and possession of thought. The patient's cognitive functions were within normal limits with full insight. On physical examination, the patient was pale, mildly icteric and had a slightly swelling abdomen with an ulcer at the left cubital fossa

The PCV was 27% and he was negative for retroviral and hepatitis screening. A diagnosis of Pentazocine addiction was made and the patient was admitted to the mental health ward for detoxification. While on the ward, he was placed on oral diclofenac 75mg twice daily. Tab DF118 40mg bd. There were complaints of intense craving, restlessness and poor sleep. In the second week, Tab chlorpromazine 100mg twice daily was added, after which he started to report a significant reduction in the craving and good sleep. He was monitored more closely and a chart detailing his movement at all times was kept. He was discharged after five weeks to outpatient care having satisfied some set goals such as detoxification, reduction in the level of craving and psychological pain. The

Chlorpromazine tablets were tapered off two weeks after discharge

Mrs B O is a 30-year-old graduate living with sickle cell disease (HbSS) who presented on September 27, 2022, with a year's history of Pentazocine self-injection. She started Pentazocine injections after being managed for vaso-occlusive crises in pregnancy. Parenteral Pentazocine was the choice of analgesia during the period. She enjoyed the euphoria associated with the drug. This made her continue the use even when there was no physical pain, injecting herself in the arm.

She was getting the injection from a designated pharmacy shop without a prescription. She spent about nine hundred Naira (about 1.10 US Dollar) per day on Pentazocine alone. She sourced money from her friends and family members. Each injected intravenous dose of 30mg lasted for about six hours. She took the drugs every day starting in the early morning. She later increased the ampoules to three per day despite becoming unemployed due to drug use.

On mental state examination, the patient was well-kept, cooperative, and appeared well-motivated. She had abdominal pain and restlessness. Her cognitive functions were within normal limits with full insight. A diagnosis of Pentazocine dependence was made and the patient was admitted to the medical ward for detoxification. While on the ward, she was placed on oral diclofenac 75mg bd. There were complaints of intense craving, restlessness and poor sleep. In the second week, tab Chlorpromazine 100mg twice daily was added after which she started to report a significant reduction in craving, restlessness, and poor sleep. She was monitored more closely and a chart detailing her movement at all times was kept. She was discharged after 4 weeks when there was no craving and psychological pain. The Chlorpromazine tablet was reduced a 100 mg nocte week after discharge

Miss E A is a 24- year- old graduate currently unemployed and living with sickle cell disease (HbSS) who presented on the 14th of October, 2022 with 3 years history of Pentazocine self-injection. She started Pentazocine after being managed for a vaso-occlusive crisis three years earlier. Parenteral Pentazocine was among the drugs used in her management. She was asked to take it as needed by the doctor and enjoyed the feeling of euphoria and the relief of pain. She gets the drug from any pharmacy shop without a prescription from the doctor. She spent about 300 Naira (0.69 US Dollars) per day on Pentazocine

alone. She got the money from her salary when still employed with a brewery as a sales representative. She later increased the ampoules to 5 daily after which she developed needle tracks with multiple dark pigments on both thighs Her stable PCV was 22% and She was negative for retroviral and hepatitis screening. A diagnosis of Pentazocine dependence was made and the patient was admitted to the medical ward for detoxification. While on the ward, she was placed on I.V. paracetamol 600mg 8 hourly. There were still complaints of intense cravings and poor sleep.

She was commenced on tab chlorpromazine 50mg am and 100mg pm. After four days of admission, she reported a reduction in cravings and sleep improvement.

Discussion and Conclusion

Pentazocine abuse among sickle cell patients in our environment is still a matter of concern (3). In the above case series, Pentazocine addiction follows a period of genuine need for the drug (bone pain crisis in the cases). It is worthy of note that the use of Pentazocine was extended after the initial doses in the hospital. It was also detected that the patient continued to fake pain after genuine pain had subsided to continue to self-inject. This is a similar pattern among Sickle Cell patients who abuse Pentazocine. (4). Withdrawal of strong analgesics from patients who genuinely need the drug is wrong and may excessively prolong distress, whereas adopting the contrary could as well link the patient to drug addiction.

Opioid replacement treatment is important in the management of opioid addiction however there are some hitches which call for further study (5). One is to find better opioid analgesics with less and even practically no addictive potential. The other course of action is the discovery of new medications to treat opioid addiction. In middle and low-income countries the accessibility of Methadone and Buprenorphine is restricted, compelling the search for an available drug that could reduce the effect of Pentazocine addiction and withdrawal among sickle cell patients.

In these cases, chlorpromazine caused a substantial subjective drop of craving as described by the patient and it also improves restlessness, appetite and sleep experienced by the patients. The role of psychotherapy and drug counselling can also not be overemphasized.

From the cases reported above, Chlorpromazine was shown to have anti-caving properties which may be due to its anti-dopaminergic (6, 7), anti-

adrenergic (8, 9), anti-histaminic (10, 11) and also bind to the opioid μ receptor in the central nervous system (12).

Addiction has been associated with an increased level of dopamine in the brain reward centre. In addition, Pentazocine withdrawal leads to increased adrenergic stimulation, poor sleep and restlessness which can be reversed by Chlorpromazine (13).

The adrenergic blocking property reduced palpitation, restlessness and anxiety-related symptoms while the anti-dopaminergic effect reduced the level of addiction. The anti-histaminic effect improved sleep and caused drowsiness and the binding to the Opioid receptors reduced the withdrawal symptoms.

The management of Pentazocine dependence can be divided into detoxification/stabilization and rehabilitation/relapse prevention stages. The second phase requires psychological and relapse prevention methods.

Clinical implication

The use of Pentazocine among people living with Sickle Cell Disease should be strictly managed by experts because of the socioeconomic and medical complications. Chlorpromazine may be beneficial in the management of Pentazocine dependence. Family physicians, haematologists, psychiatrists and other relevant specialists should be aware of the danger of Pentazocine addiction among people living with Sickle Cell Disease.

List of Abbreviations

SCD: Sickle Cell Disease
VOC: Vaso-occlusive crisis
DA: Dopamine

Declaration

Ethics approval and consent to participate

Ethical Approval was given by the Research and Ethics Committee of the University of Medical Science Ondo, Ondo State Nigeria (UNIMEDTHC/021/054). Patient participation was voluntary, and informed consent was obtained from each patient.

Consent to Publish

Informed Consent to publish the report was obtained from the patients.

Availability of data and materials

The essential data supporting the findings of this study are available within the article. Additional

data are available on request from the corresponding author due to confidential reasons

Competing interests

The authors declare that they have no competing interests.

Funding

No funding.

Author contributions

All the authors were involved in the management of the patients and conceptualizing the report. FJ, OAO, and DRF wrote the first manuscript. AjAA OPO, AkAA and SS, corrected the manuscript. All the authors agreed on the final manuscript. The manuscript has been read and approved by all the authors

Acknowledgements

We acknowledge the participants, research assistants, and hospital authorities for the opportunity to manage the patients and report the cases.

References

1. Egesa WI, Nakalema G, Waibi WM, Turyasiima M, Amuje E, Kiconco G, Odoch S, Kumbakulu PK, Abdirashid S, Asimwe D. Sick cell disease in children and adolescents: a review of the historical, clinical, and public health perspective of sub-saharan africa and beyond. *International Journal of Pediatrics* 2022;3885979:1-26. <https://doi.org/10.1155/2022/3885979>
2. Adewoyin A, Adeyemi O, Davies N, Ojo M. Clinical and socio-demographic determinants of pentazocine misuse among patients with sickle cell disease, Benin City, Nigeria: A case-control study. *Pan African Medical Journal*. 2019 Oct 14;34(1):1-10. <https://doi.org/10.11604/pamj.2019.34.88.17257>
3. Nnachi OC, Akpa CO, Nwani FO, Edenya OO. Pentazocine Misuse among Sick Cell Disease Patients and The Role of Lack of Enforcement of Opioid Dispensing Regulations by Community Pharmacies: A Descriptive Observational Study. *Advances in Public Health*. 2022;(877882):1-6. <https://doi.org/10.1155/2022/3877882>
4. Armiya'u AY, Garba BI, Haliru DG. Intravenous pentazocine dependence in a young sickle cell anemia patient: A case report. *Case Rep Int*. 2016;5:1-4. <https://doi.org/10.5348/crint-2016-20-CR-1>
5. Monwell, B.; Bülow, P.; Johnson, B., The pros and cons of supervised urine tests in opioid replacement therapy: A study of patients' experiences. *Heroin Addiction and Related Clinical Problems* 2018, 20(6):5-15.
6. González-Rodríguez A, Monreal JA, Natividad M, Seeman MV. Seventy years of treating delusional disorder with antipsychotics: A historical perspective. *Biomedicine*. 2022 Dec 18;10(12):3281. <https://doi.org/10.3390/biomedicine10123281>
7. Seeman, M.V., 2021. History of the dopamine hypothesis of antipsychotic action. *World Journal of Psychiatry*;11(7):355-364. <https://doi.org/10.5498/wjp.v11.i7.355>
8. Vaiman EE, Novitsky MA, Nasyrova RF. Pharmacogenetics of chlorpromazine and its role in the development of antipsychotic-induced parkinsonism. *Personalized Psychiatry and Neurology*. 2021 May 15;1(1):11-7. <https://doi.org/10.52667/2712-9179-2021-1-1-11-17>
9. Zareifopoulos N, Katsaraki M, Stratos P, Villiotou V, Skaltsa M, Dimitriou A, Karveli M, Efthimiou P, Lagadinou M, Velissaris D. Pathophysiology and management of Akathisia 70 years after the introduction of the chlorpromazine, the first antipsychotic. *European Review for Medical & Pharmacological Sciences*. 2021 Jul 15;25(14).
10. Cookson J. Histamine in psychiatry: promethazine as a sedative anticholinergic. *BJPsych Advances*. 2019 Jul;25(4):265-8. <https://doi.org/10.1192/bja.2019.21>
11. Dayton L. Early elixirs: Chlorpromazine: From antihistamine to antipsychotic. *Australian Pharmacist*. 2020 Mar 1;39(2):82.
12. Aljbori MA, Alshalchi RF, Faris GA. Evaluation the sedative and analgesic effects of tramadol and chlorpromazine alone or as a combination in chicks. *Kufa Journal For Veterinary Medical Sciences*. 2021 Jun 30;12(1):16-22. <https://doi.org/10.36326/kjvs/2021/v12i13221>
13. Koyejo OM, Owoeye OA. Biopsychosocial complications of pentazocine dependence: A case report from a co-occurring treatment facility in Lagos. *Nigerian Journal of Medicine*. 2020;29(4):720-2. https://doi.org/10.4103/NJM.NJM_29_20