Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/r8t8nq61

POLYDRUG ABUSE WITH HEPATITIS C VIRUS POSITIVITY IN A 17-YEAR-OLD MALE: A MULTIDISCIPLINARY CLINICAL CHALLENGE

Aparna V[1], Kirthika V[2], Dr.M. Dheenadhayalan[3], Dr.K. Karthickeyan[4], Dr. P. Shanmuga Sundaram[5], Dr. M.K. Sundar Sri[6]

[1]Pharm-D Intern, School of Pharmaceutical Science, Vels Institute of Science, Technology and Advanced Studies, Chennai, Tamil Nadu, India. EMAIL ID: aparnavenky54@gmail.com
[2]Pharm-D Intern, School of Pharmaceutical Science, Vels Institute of Science, Technology and Advanced Studies, Chennai, Tamil Nadu, India. EMAIL ID: kirthikav07@gmail.com
[3]Assistant Professor of the Department of Pharmacy Practice, School of Pharmaceutical Science, Vels Institute of Science, Technology and Advanced Studies, Chennai, Tamil Nadu, India. EMAIL ID: drdheenadhayalanap@gmail.com
[4]Professor and Head of the Department of Pharmacy Practice, School of Pharmaceutical Science, Vels Institute of Science, Technology and Advanced Studies, Chennai, Tamil Nadu, India. Email ID: hodppractice@velsuniv.ac.in
[5]Dean of the Department of Practice, School of Pharmaceutical Science, Vels Institute of Science, Technology and Advanced Studies, Chennai, Tamil Nadu, India. EMAIL ID: dean.sps@vistas.ac.in
[6]Assistant Professor of the Department of Pharmacy Practice, School of Pharmaceutical Science, Vels Institute of Science, Technology and Advanced Studies, Chennai, Tamil Nadu, India. EMAIL ID: sundarsri.sps@velsuniv.ac.in

***Corresponding Author:** Dr. M.K. Sundar Sri
*Assistant Professor of the Department of Pharmacy Practice, School of Pharmaceutical Science, Vels Institute of Science, Technology and Advanced Studies, Chennai, Tamil Nadu, India. EMAIL ID: sundarsri.sps@velsuniv.ac.in

Abstract

Polydrug abuse among adolescents is a pressing public health crisis, exacerbated by concurrent infections such as hepatitis C virus (HCV), which compound clinical complexity and management challenges. This report describes a 17-year-old male with a one-year history of polydrug abuse—encompassing alcohol, tobacco, cannabis, and intravenous drug use—who presented with somatic complaints, chest pain, and sleep disturbances. Mental status assessment revealed significant anxiety and difficulties in rapport-building. Laboratory investigations demonstrated profound hepatic injury (SGPT: 1055 U/L, SGOT: 1640 U/L) and confirmed HCV infection (Anti-HCV: Reactive, HCV RNA: 19.74 IU/mL). Management was multidisciplinary, integrating psychiatric care (risperidone, clonazepam), direct-acting antiviral therapy (sofosbuvir and daclatasvir), hepatoprotective agents (ursodeoxycholic acid, B.liv forte), and comprehensive counseling on abstinence and lifestyle modification.

The case underscores the critical need for early identification and integrated, guideline-based management in adolescent polydrug users with HCV. Multidisciplinary collaboration involving mental health, infectious disease, and pharmacy services is essential to optimize clinical outcomes,

reduce morbidity, and support sustained recovery1. Continued follow-up is recommended to monitor for relapse and ensure long-term well-being.

Keywords: Polydrug abuse, Hepatitis C virus, Adolescent, Psychiatric management, Direct-acting antivirals, Multidisciplinary care, Liver injury, substance use disorder

Introduction

Polydrug abuse among adolescents is a rapidly escalating public health crisis, characterized by the concurrent use of multiple psychoactive substances such as alcohol, tobacco, cannabis, and illicit intravenous drugs. This behaviour is particularly concerning due to the heightened vulnerability of adolescents to peer influence, impulsivity, and underlying mental health issues, which collectively predispose them to experimentation and sustained substance misuse1. The intersection of polydrug abuse with infectious diseases—most notably hepatitis C virus (HCV) infection—creates a clinical scenario marked by increased morbidity, complexity of management, and risk of long-term sequelae such as chronic liver disease and mental health deterioration.

HCV infection, often contracted through unsafe injection practices, adds a significant layer of clinical challenge. The virus can cause both acute and chronic liver injury, with manifestations ranging from mild biochemical abnormalities to fulminant hepatic failure. Adolescents with concurrent polydrug abuse and HCV infection present unique difficulties in diagnosis, treatment adherence, and recovery due to their psychosocial context and the stigma associated with substance use and infectious diseases1. Early identification and intervention are paramount, as delayed management can result in irreversible liver damage, psychiatric comorbidities, and increased risk of transmission within communities.

Case Presentation

A 17-year-old male presented with a one-year history of polydrug abuse, including alcohol, tobacco, cannabis, and intravenous drug use. He reported somatic complaints, persistent chest pain, and significant sleep disturbances. Mental status evaluation revealed marked anxiety and difficulty establishing rapport. Despite initial denial of continued substance use, laboratory investigations demonstrated profound hepatic injury and confirmed HCV infection1.

Investigations:

SGPT: 1055 U/L (Normal: 5–35)
SGOT: 1640 U/L (Normal: 5–40)
Total Bilirubin: 3.0 mg/dL
Direct Bilirubin: 1.5 mg/dL
ALP: 184 U/L
CRP: 3.1 mg/dL
Anti-HCV: Reactive (1.641)
HCV RNA: 19.74 IU/mL
CT Brain: Normal
ECG: Tachycardia

Diagnosis:

Polydrug abuse, Hepatitis C infection, and acute liver injury

Treatment Rationale with Guideline Support

The patient's management was guided by a multidisciplinary approach, integrating principles from psychiatry, hepatology, and clinical pharmacy. The rationale for treatment was informed by current national and international guidelines, as outlined below:

- **Psychiatric Management:**

The patient was prescribed risperidone and clonazepam to address anxiety and behavioral disturbances. This aligns with the National Institute on Drug Abuse (NIDA) recommendations for adolescent substance use disorder treatment, which emphasize the importance of addressing comorbid psychiatric symptoms to improve treatment adherence and outcomes.

- **Antiviral Therapy:**

The patient was started on a regimen of Sofosbuvir 400 mg and Daclatasvir 60 mg, in accordance with the World Health Organization (WHO) guidelines for the care and treatment of persons diagnosed with chronic hepatitis C virus infection. Direct-acting antivirals (DAAs) such as sofosbuvir and daclatasvir are recommended due to their high efficacy, favorable safety profile, and short treatment duration.

- **Hepatoprotective Therapy:**

Ursodeoxycholic acid (UDCA) and B.liv forte were administered to support hepatic recovery and mitigate drug-induced liver injury, a common concern in polydrug users.

- **Counseling and Lifestyle Modification:**

The patient and his family received comprehensive counseling on abstinence, adherence to medication, and nutritional support, as recommended by both NIDA and WHO guidelines for adolescent substance use and HCV management.

Outcome and Follow-up

Improvement was observed in clinical symptoms and enzyme levels over the hospital stay. Continued psychiatric and hepatology follow-up was advised.

Discussion

This case highlights the complex interplay between polydrug abuse, mental health, and infectious disease in adolescents. The patient's presentation with acute liver injury and HCV infection underscores the risks associated with intravenous drug use, particularly in a population already vulnerable due to psychosocial stressors and behavioural vulnerabilities1. The marked elevation of liver enzymes (SGPT and SGOT) indicated significant hepatic damage, necessitating prompt intervention.

The multidisciplinary approach—incorporating psychiatric care, antiviral therapy, hepatoprotection, and patient education—was critical in addressing the multifaceted needs of the patient. Psychiatric medications helped stabilize mood and reduce anxiety, facilitating better engagement with treatment. Antiviral therapy with DAAs was chosen for its proven efficacy and minimal side effects, as supported by current guidelines. Hepatoprotective agents and nutritional counseling further supported hepatic recovery and overall well-being.

The case also emphasizes the importance of early identification and intervention. Adolescents with polydrug abuse and HCV infection are at high risk for poor outcomes if left untreated, including progression to chronic liver disease, psychiatric deterioration, and increased risk of transmission. Integrated care models that involve mental health, infectious disease, and pharmacy services are essential for optimizing outcomes in this population.

Conclusion

The management of adolescent polydrug users with comorbid HCV infection requires a coordinated, multidisciplinary approach. This case demonstrates that early identification, psychiatric support, guideline-based antiviral therapy, hepatoprotection, and comprehensive counseling can lead to significant clinical improvement and reduce the risk of long-term complications. Continued follow-up and support are necessary to ensure sustained recovery and prevent relapse. The integration of mental health, hepatology, and pharmacy services is paramount in addressing the complex needs of this vulnerable population.

References

1. **Sharma A, et al.** Polydrug use and mental health. *Indian Journal of Psychological Medicine*, 2020, 42(1), 21–26.
2. **Johnston LD, et al.** Monitoring the Future national survey results on drug use, 1975–2023. University of Michigan, Institute for Social Research, 2023.
3. **World Health Organization.** Guidelines for the care and treatment of persons diagnosed with chronic hepatitis C virus infection. World Health Organization, 2018.
4. **Pawlotsky JM.** Hepatitis C virus resistance to direct-acting antiviral drugs. *Gastroenterology*, 2016, 151(1), 70–86.
5. **Indolfi G, et al.** Direct-acting antivirals for children and adolescents with chronic hepatitis C virus infection. *Hepatology*, 2023, 77(4), 1234–1246.
6. **National Institute on Drug Abuse.** Principles of Adolescent Substance Use Disorder Treatment. NIH, 2023.
7. **Kelly JF, et al.** Integrated treatment for substance use and psychiatric disorders in adolescents: A review. *Journal of Child and Adolescent Psychopharmacology*, 2022, 32(3), 173–180.
8. **Subramaniam G, et al.** Multidisciplinary approaches to adolescent substance use disorders. *Child and Adolescent Psychiatric Clinics of North America*, 2021, 30(3), 545–563.
9. **Harris M, et al.** Early intervention for youth with substance use and hepatitis C: Outcomes from an integrated care model. *Journal of Adolescent Health*, 2024, 74(1), 102–109.
10. **Pediatric and Adolescent Hepatitis C Care Cascade and Real-World Efficacy of Direct-Acting Antivirals.** *Journal of Pediatric Gastroenterology and Nutrition*, 2024. (PMC12123190)
11. **Kumar S, et al.** Increasing prevalence of hepatitis C among hospitalized children is associated with an increase in substance abuse. *Journal of Pediatrics*, 2018, 192, 159–164.
12. **World Health Organization.** Hepatitis C fact sheet. 2024.
13. **Center for Disease Analysis Foundation.** Global prevalence of hepatitis C in people who inject drugs. 2023.
14. **Degenhardt L, et al.** Global prevalence of injecting drug use and sociodemographic characteristics and prevalence of HIV, HBV, and HCV in people who inject drugs: a multistage systematic review. *The Lancet Global Health*, 2017, 5(12), e1192-e1207.
15. **Malekinejad M, et al.** High HCV seroprevalence and injection risk among people who inject drugs: a systematic review and meta-analysis. *Journal of Hepatology*, 2015, 63(2), 476–486.
16. **Jonas MM, et al.** Treatment of adolescents with chronic hepatitis C: Lessons from the adult experience. *Hepatology*, 2017, 66(5), 1666–1675.
17. **US Preventive Services Task Force.** Screening for hepatitis C virus infection in adolescents and adults: US Preventive Services Task Force Recommendation Statement. *JAMA*, 2020, 323(10), 970–975.
18. **Minozzi S, et al.** Psychosocial interventions for psychostimulant misuse. *Cochrane Database of Systematic Reviews*, 2021, 2, CD011866.
19. **Kamin DS, et al.** Hepatitis C virus infection in children and adolescents: A review of the literature. *Clinical Liver Disease*, 2021, 17(5), 343–347.
20. **Hepatitis C Online.** Core Concepts – Treatment of HCV in Persons with Substance Use. University of Washington, 2024.