The Interplay of Addiction with Physical and Mental Health: A Case Report of Inhalant Use Disorder, Asthma, and Depression

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Purpose
Illustrate the complexity of the interaction of physical health, mental health and substance use disorder

Background
Inhalation use disorder, according to the DSM-V diagnostic criteria:

A. A problem pattern of use of a hydrocarbon-based inhalant substance leading to clinically significant impairment or distress, manifested by at least 2 of the following:
   1. Often taken in larger amounts or over a longer period than intended
   2. Persistent desire or unsuccessful efforts to cut down or control use
   3. Great deal of time is spent to obtain, use or recover from substance
   4. Craving, or a strong desire or urge to use
   5. Recurrent use resulting in failure to fulfill major role obligations
   6. Recurrent use despite having persistent or recurrent social/interpersonal problems caused or exacerbated by use
   7. Social, occupational or recreational activities given up or reduced due to use
   8. Recurrent use in situations in which it is physically hazardous
   9. Use is continued despite knowledge of a persistent or recurrent physical or psych problem that is likely to have been caused or worsened by substance
10. Tolerance
   • The disorder extending into adulthood is associated with substance use disorders, antisocial personality disorder, and SI with attempts
   • Studies have also found higher rates of mood, anxiety and personality disorders in inhalant users
   • Rate of clinical psychiatric disorders was found to be higher in patients with inhalant use disorder when compared to groups of other substance use patients and patients without substance use disorder
   • Prevalence of 0.02% in all Americans 18 years and older
   • Long-term users are at increased risk for TB, HIV/AIDS, STDs, depression, anxiety, bronchitis, asthma, and sinusits

Case Presentation
51-year-old Caucasian male admitted to psychiatric hospital after increased compressed air inhalant use leading to suicidal ideation

History of Present Illness at Admission:
• Patient admitted from a community-based mental health agency after presenting to the ER with depressed mood and SI without plan, subsequently denying any SI the following day after presentation
• Patient had increased his compressed air inhalant use in the past couple weeks due to increased stress, partially attributable to loss of employment. He had binged “3 dozen cans” the few days prior to admission, resulting in bizarre and unpredictable behavior reported by the patient and confirmed by collateral information

Psychiatric History:
• MDD vs unspecified depressive disorder vs inhalant induced depressive disorder vs borderline personality disorder
• Hx of SI, self-reported several intentional overdoses, suicide attempt after a personal relationship ended resulting in hospitalization and at least 4 other mental health treatments, both inpatient and outpatient
• Previous medication trials: Effexor, Ability, Buspar, Desyrel and Remeron
• History of unstable relationships, affective instability, attention seeking behaviors

Past Medical/Surgical History:
• Asthma, GERD, obesity, hyperlipidemia, hypertension, vitamin D deficiency
• Numerous ER visits for asthma and inhaler refills
• Past surgical hx of carpal tunnel, hernia, tear duct and rhinoplasty

Psychosocial History:
• Identifies as a gay man
• Very displeased with current living conditions, multiple complaints of “bad bugs”
• Earned a bachelor’s degree from OSU in engineering
• Reports financial stressors, especially car payment
• Hx of domestic violence as both a victim and a perpetrator. Previous domestic violence charge
• Hx of inhalant use disorder
• Hx of alcohol use, last drink reported 10 days ago
• Hx of marijuana use, 2-3x/week
• Remote history of opioid and benzodiazepine use, reported last uses in 2017 and 2015 respectively
• At least 3 previous SUD treatments

Brief Hospital Course:
• Community-based mental health agency screening performed indicated that the patient reported 8 symptoms of abuse regarding inhalant use
• Endorsed SOB, diaphoresis and a 10lb unintentional weight loss over the past month
• MSE showed improved mood, affect, judgement, insight and impulse control over hospital course
• Vitals: BP 117/59 T98.0 P88 R14 BMI 34
• Labs: WBC 8.9, RBC 4.9, MCV 85.8, Hgb 13.0, Hct 39.7, BUN 35, Creatinine 1.1, Esr 9, CRP 0.1, Bilirubin 0.4, Alk Phos 117, ALT 18, AST 16, Glucose 89, Total Choles 161, HDL 42, LDL 100, TG 51, Calcium 9.7, Magnesium 2.4, Phosphate 4.1, Potassium 4.7

Biopsychosocial Formulation:

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<td>Male sex</td>
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<td>Perpetuating</td>
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<td>Use of other substances including alcohol and marijuana</td>
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<td>Protective</td>
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<td>History of successful addiction treatment</td>
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Conclusions
This case report illustrates the complex interfacing of mental illness, physical illness and substance use to create patient problems, as well as the importance of relying on physical exam findings and other objective measures to confirm subjective patient complaints and drive indicated, appropriate treatment. Another key takeaway is the importance of recognizing and screening for SUD that avoids detection on drug screen. The patient’s longstanding asthma, inhalant use disorder, history of depression, suicidal ideation and attempts, past psychotropic medication use, and instability in affect and relationships raises questions as to the temporality of his experienced issues and the best approach to treatment. Although broader consideration of the patient can complicate reaching a diagnosis, this is necessary for proper treatment and patient education. Utilizing a holistic approach to patient diagnosis and treatment ensures that vital care informing factors are not missed. The biopsychosocial formulation lays out potential patient drivers, motivators, triggers, and protectors that are essential to patient centered care.

References