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

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Purpose

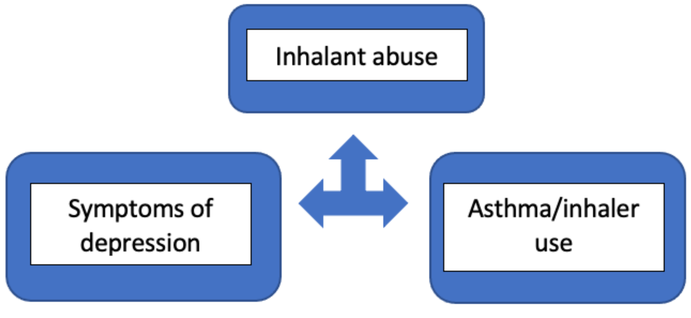
Illustrate the complexity of the interaction of physical health, mental health and substance use disorder

Background

Inhalation use disorder, according to the DSM-V diagnostic criteria[1]:

A. A problematic 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 having 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[1,2]
  - Studies have also found higher rates of mood, anxiety and personality disorders in inhalant users[2,3,4]
  - 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[4]
- Prevalence of 0.02% in all Americans 18 years and older[1]
- Long-term users are at increased risk for TB, HIV/AIDS, STDs, depression, anxiety, bronchitis, asthma, and sinusitis[1]



Asthma inhaler use

- Albuterol overuse → defined as 3 or more cannisters per year
  - Most important driver of overuse = use on symptom-free days [5]
  - Associated with poorer outcomes, dependence, worse asthma control, increased health care utilization, more exacerbations, lower mental and physical functioning[5]
- Overuse and depression
  - Patient with overuse → 2x risk for clinical depression[5]
  - Consider depression as a potential comorbidity of overuse[5]
  - Depression is prominent among those who overuse albuterol inhalers, as well as those who are nonadherent to control medications[5]
- Emotional dysregulation, overuse of short-acting inhaled medications and acute medical care utilization [6]

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, Abilify, 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 “bed 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, diarrhea 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
- Patient frequently requested his inhaler for subjective SOB without any physical exam finding corroboration
  - No wheezing, distress or remarkedly abnormal vitals were noted when requests were made
  - In a 1 week span the patient used an Albuterol inhaler 28x
  - Shortly after admission, the patient said “6 hours is just torture” when requesting use of his inhaler every 30 minutes, claiming that “any physical movement” lead to SOB

Interventions & Response

- Adequate and appropriate group participation
- Adherent to medication, patient discharged on Prozac 20mg; observed to be much improved
- Counseled on proper maintenance use of Albuterol inhaler throughout stay
- Denied SI, reported improved mood
- Evidence of improved insight, forward thinking
- Referred to a community mental health agency and addiction treatment center for follow up as an outpatient
- Risk assessment low at time of discharge

Biopsychosocial Formulation:

	Biological	Psychological	Social
Predisposing	• Male sex • Early use of substance • **Longstanding asthma?**	• Previous suicide attempt • **Inhaler overuse?** • **History of depression?**	• History of relationship instability
Precipitating	• Increased use recently • Medication non-adherence	• Increased stress and loss of employment → depression and increased substance use	• Recently fired from job, increased financial stress
Perpetuating	• Use of other substances including alcohol and marijuana • Lack of consistent mental health tx and follow up	• Lack of adaptive coping mechanisms leading to cycle of substance use, depression and SI • Emotional instability, instable relationships • **Inhaler overuse/ dependence?** • **History of depression?**	• Instability in close relationship • Ongoing financial difficulties/ job loss • Uncomfortable living environment • History of DV
Protective	• Adequate response to SSRI therapy • History of successful addiction treatment • Access to care • Absence of family psych hx	• University educated • Fair insight, as he sought help for himself	• Reports friendships • Previous employment • Relationship with sister • Linked with outpatient care on discharge

Conclusions

This case report illustrates the complex intermingling 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.

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