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Bridget Hayes

hayes10@otterbein.edu

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Substance Use Disorder in the CRNA

Bridget Hayes, BSN

Otterbein University, Westerville, Ohio

Introduction

- Substance use disorder (SUD) is considered the number one occupational hazard for certified registered nurse anesthetists (CRNAs) (Rupprecht, 2022).
- This topic was chosen because it is so prevalent in the anesthesia community. An estimated 10-15% of anesthesia providers will be affected by SUD in their career (Rupprecht, 2022).
- SUD in the anesthesia profession can only be decreased by integrating education and policies that deal with this issue in a timely, safe, and non-punitive manner (AANA, 2021).
- The American Association of Nurse Anesthesiology (AANA) has many resources that focus on early detection, anti-drug diversion campaigns, and appropriate response to a detected issue (AANA, 2021).
- The AANA is focusing on an "alternative to discipline." This means that disciplining the CRNA is not at the forefront. Instead, the focus is on successful rehabilitation with the goal of being able to return to work (AANA, 2021).

Signs & Symptoms of SUD

There are many indications of an underlying substance use issue that can be identified by coworkers. Early detection is key to a successful treatment program (Rupprecht, 2022).

Behavioral changes that an anesthesia provider may exhibit include severe mood swings and personality changes, confusion, memory loss, and difficulty concentrating (Rupprecht, 2022).

Physical indications of substance use disorder include deterioration of appearance and personal hygiene, bloodshot or glazed eyes, track marks, weight loss, and issues sleeping (Rupprecht, 2022).

Work related issues can include underperformance, poorly explained errors, repetitive tardiness, and unexplained absences (Rupprecht, 2022).

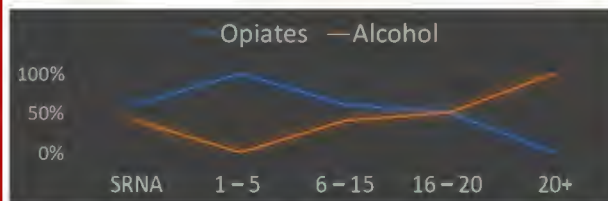


Figure 1: Relative likelihood of opiate and alcohol abuse over the course of an anesthetic career (AANA, 2021).

Underlying Pathophysiology

The components contributing to SUD in the anesthesia provider are a multifactorial and complex combination of psychological, genetic, and environmental factors. This poster will focus on the role of microRNAs in the pathophysiology of addiction (Gowen et al., 2020).

MicroRNAs (miRNAs) are small, noncoding RNAs that play a role in post-transcriptional gene regulation (Gowen et al., 2020). They are capable of repression/gene silencing and can affect many cellular functions such as development, differentiation, growth, and metabolism. Over 1,900 miRNAs have been identified in the human genome, and it is estimated that there are hundreds more to be discovered (Gowen et al., 2020). To summarize, miRNAs are tools to regulate gene expression.

In those suffering with SUD, several altered miRNA levels have been identified (Gowen et al., 2020). Each substance (such as opiates or alcohol) affect the alteration of miRNAs in a different manner, leading to distinct consequences. It is well established that altered gene expression is associated with the dysfunction of neurons (Gowen et al., 2020). This dysfunction can be associated with the behavioral phenotype of SUD that the advanced practiced nurse is familiar with (Gowen et al., 2020).

MiRNAs were recently discovered in 1993 (Gowen et al., 2020). This topic is still being studied for its usefulness in identifying and treating SUD, along with other disease processes (Gowen et al., 2020).

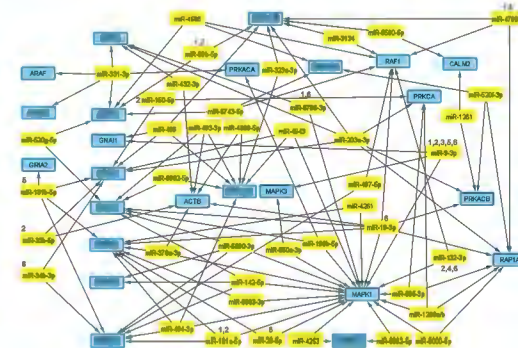


Figure 2: The underlying genes in the drug addiction pathway in relation to miRNAs (Gowen et al., 2020).

Significance of Pathophysiology

One common misconception surrounding substance use disorder is that it is caused by lack of self control (Rupprecht, 2022). It is not as well understood that SUD can physically alter brain function, leading to additional issues for those affected (Rupprecht, 2022).

While the concept of miRNA is foreign to most advanced practice nurses and will likely never come up in daily practice, this topic is being explored in this way to demonstrate that SUD can physically affect brain function (Gowen et al., 2020).

This presentation intends to lead the advanced practice nurse to treat themselves, their coworkers, their patients, and community from a place of empathy in regards to SUD.

Implications for CRNAs

The implications of SUD within the anesthesia community can not be understated.

First, the CRNA must be aware of their own risk for SUD. Risk factors related to the anesthesia community include access to scheduled medications, working in a high stress environment, production pressure, fatigue/burnout, and poor work/life balance (AANA, 2021). In addition, each provider needs to assess their own risk factors such as family history, a diagnosis of a mental health disorder, or a history of trauma (Rupprecht, 2022).

Secondly, the CRNA must be aware of the signs and symptoms of SUD so that they can identify it if it affects a coworker. Early identification and treatment are key in combatting this disease (Rupprecht, 2022). Early detection increases the chances of a successful rehabilitation and subsequent return to work (Rupprecht, 2022).

Conclusions

- Substance Use Disorder affects a large percentage of the anesthesia community.
- CRNAs should be aware of the risk factors associated with SUD and the resources available to help them.
- CRNAs should be aware of the signs and symptoms that someone affected with SUD may exhibit. This is because early identification is better for treatment.
- The AANA offers many recommendations and resources aimed at preventing, recognizing, and treating SUD.
- miRNAs are tools to regulate gene expression. They are just one example of the way that SUD can physically alter the human body.
- If a CRNA that you know is suffering with Substance Use Disorder, you can contact the AANA's helpline at **1-800-654-5167**

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- American Association of Nurse Anesthesiology. (2021). *Addressing substance use disorder in anesthesia professionals: Position statement and policy considerations*. https://www.aana.com/docs/default-source/practice-aana-com-web-documents-all/professional-practice-manual/addressing-substance-use-disorder-for-anesthesia-professionals.pdf?sfvrsn=ff0049b1_10
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