IMPACT OF BARBITURATES ON HUMAN HEALTH

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ABSTRACT

Barbiturates are medications that cause you to relax or feel drowsy. They can also stop or prevent convulsions and seizures. The most common uses are for anesthesia reasons, treating epilepsy and nonepileptic seizures, insomnia and other conditions.

Barbiturates belong to the sedative-hypnotic class of medications. Sedatives are medications that help you calm down and relax. Hypnotics make you drowsy (their name comes from the word "hypnos," which means "sleep" in Greek).

Barbiturates affect your brain by increasing a brain chemical called gamma-aminobutyric acid (GABA), which slows down the activity of your brain cells.
KEYWORDS-Barbiturates, human health, hypnotic, sediatives, treatment

INTRODUCTION

Barbiturates are central nervous system (CNS) depressants that increase gamma-aminobutyric acid (GABA) activity in the brain, slowing down brain cell activity, heart rate, breathing, and body temperature. [1, 2]

Short-Term Effects

- Relaxation and Drowsiness: Induces calm, sleep, mild euphoria, and lack of restraint. [1, 2]
- Impaired Function: Causes slurred speech, poor physical coordination, dulled thinking, and memory loss. [1, 2, 3]
- Cardiorespiratory Slowing: Lowers blood pressure, heart rate, and respiratory drive, which can lead to low body temperature (hypothermia). [1, 2]

Long-Term Effects

- Tolerance and Dependence: Repeated use forces the brain to adapt, requiring higher doses to achieve the same effect and leading to physical and psychological addiction. [1, 2]
- Cognitive Decline: Chronic misuse causes persistent memory issues, reduced attention span, difficulty making decisions, and low motivation. [1]
- Sleep Disruption: While initially used to treat insomnia, long-term use damages natural sleep architecture, making unassisted sleep difficult. [1]
- Neglect of Health: Users may experience severe physical wear-down, poor nutrition, and social isolation. [1]

Overdose and Toxicity Risks

- Narrow Therapeutic Index: The difference between a medical dose and a lethal dose is small, making accidental or intentional overdose very dangerous. Statistics show that roughly 1 in 10 people who overdose on barbiturates or barbiturate mixtures die, typically from heart and lung failure. [1, 2, 3]
- Complications: Overdoses can cause comas, permanent kidney damage from muscle breakdown, aspiration pneumonia from a depressed gag reflex, and severe falls resulting in head or spinal injuries. [1]
- Dangerous Combinations: Mixing barbiturates with alcohol, opioids, or other sedatives drastically increases the risk of fatal respiratory depression. Learn more about safety precautions and clinical uses via the Cleveland Clinic Barbiturates Guide. [1, 2]

Withdrawal Risks

- Life-Threatening Symptoms: Abruptly stopping barbiturates after developing a dependence causes severe over-excitation of the nervous system.
- Timeline and Manifestations: Withdrawal starts within 24 hours and includes severe anxiety, tremors, insomnia, delirium, and life-threatening seizures that require strict medical supervision. For recovery resources and guidance, look into structured detox options like the Narconon Program Information. [1, 2]

Barbiturates have been used historically to treat insomnia and psychiatric disorders, provide anesthesia, and manage alcohol withdrawal, elevated intracranial pressure, and seizures. Once extremely popular for a broad spectrum of indications in the late 20th century, the use of these drugs has declined mainly in favor of agents with more favorable safety profiles. However, barbiturates are still prescribed or obtained illicitly, and their misuse, whether intentional or not, can lead to grave harm or death. The presentation of barbiturate toxicity includes a spectrum of effects ranging from sedation to coma, respiratory depression to apnea, and vasodilation to profound hypotension. Thus, emergent and intensive care is required with significant intoxication.

This activity reviews the pathophysiology, symptomatology, evaluation, and management of barbiturate toxicity and is pertinent to the multidisciplinary team that provides care for patients presenting with barbiturate toxicity.[4,5,6]

Objectives:

Determine the epidemiology of barbiturate toxicity.
Identify the pathophysiology of barbiturate toxicity.
Identify the symptomatology of barbiturate toxicity.
Develop effective management decisions for patients who present with barbiturate toxicity.

DISCUSSION

Barbiturates are central nervous system (CNS) depressants that reduce nerve activity in the brain, causing muscle relaxation. They’re usually prescribed to treat headaches, insomnia, and seizures and can reduce functions like heart rate, breathing, and blood pressure. Some common barbiturate drugs include amobarbital (Amytal), butabarbital (Butisol), pentobarbital (Nembutal), and secobarbital (Seconal). As with many other prescription drugs, barbiturates are often abused for their sedative effects on the body. Since the 1800s, people have been misusing barbiturates

and suffering the repercussions. Our drug rehab in Massachusetts is sharing barbiturates' side effects and why they're so addictive.

How Do Barbiturates Work?
Barbiturates work by increasing the activity of a chemical in the brain called gamma-aminobutyric acid (GABA). GABA is a naturally occurring amino acid that acts as a neurotransmitter or chemical messenger in the brain. This chemical is formally known as an inhibitory neurotransmitter because it blocks (inhibits) specific brain signals and reduces nerve activity in the brain and spinal cord. When GABA attaches to a protein in your body called a GABA receptor, it produces a relaxing and sedative effect, which makes medications like barbiturates effective for treating anxiety.

Barbiturates are highly addictive drugs. This addiction propensity is why other medications like benzodiazepines were created as safer alternatives. However, barbiturates' mechanism of action, inhibition of the central nervous system, is also the main reason why people abuse these medications. When a person takes them in high doses, they may experience a euphoric and relaxing high. With frequent abuse, barbiturates' adverse effects can catch up to you. If you or someone you know is addicted to a prescription drug like these, our medical detox at Clearbrook Massachusetts can help.[7,8,9]
Barbiturates are derived from a chemical called barbituric acid, hence their name. While the acid itself serves no medical purpose, any drugs derived from it increase the action of GABA, making them effective in treating conditions associated with high levels of nerve activity in the CNS. Additionally, barbiturates are also common drugs of abuse. In 2018, approximately 405,000 people in the United States aged 12 and higher reported using barbiturates, and 32,000 of the same age bracket reported misusing them.1

When used recreationally or in high doses, barbiturates effects on behavior and the body include:

Euphoria
Relaxation
Dizziness
Lightheadedness
Sedation
Reduce inhibition
Impaired judgment
Loss of coordination
Confusion
Headache
Nausea
Vomiting
Abdominal pain
Slowed breathing
Reduced heart rate
Tolerance
Dependence
Addiction

The effects of barbiturates can kick in within 15 and 40 minutes and can last for up to six hours. Long-acting barbiturates' side effects can last for up to two days. The longevity and severity of these side effects vary depending on the dosage taken, how long the person has been using them, and whether the medications are classified as ultrashort-, short-, intermediate-, or long-acting.

Despite being Schedule II, III, and IV drugs, barbiturates are among the most commonly abused drugs in the U.S. Even with their medical purpose, barbiturates' long-term effects often include tolerance, physical dependence, and addiction. A person with increased tolerance to these drugs requires a higher dosage each time to experience the same high or side effects. More frequent use eventually results in physical dependence, which is marked by withdrawal symptoms when drug use stops. Chronic barbiturate users may experience withdrawal symptoms within 8 to 15 hours after their last use. These prescription drugs are also commonly abused along with other substances like alcohol, heroin, and benzodiazepines to enhance users' high, though taking barbiturates and other substances together increase the risk of overdose significantly.

Prescription drugs aren't entirely safe just because they're prescribed to you by your doctor. Always take medications as prescribed and as directed by your physician. Many people who begin misusing their prescription pills end up needing prescription drug treatment to regain their sobriety and recovery physically.[10,11,12]

RESULTS

The primary desirable effect of barbiturates - from a doctor's viewpoint - is that they tend to induce sleep. For a person who is sleepless and anxious, these drugs offer a solution. But as long as doctors have prescribed barbiturates like Nembutal, Seconal, Amytal and others, there have been people abusing these drugs and becoming addicted to them. And just as long, there have been people who have been overdosing on these drugs and losing their lives.

One of the reasons that people lose their lives on barbiturates is that the dose that will kill a person is not that much more than the dose that will help them sleep.

When someone is using this drug recreationally, they are looking for the "drunkenness," the lowered inhibitions, the euphoria that accompanies use of the drug, or they may just be seeking the sedated feeling they get.

There are other effects that also can tip off a person who is trying to understand changes in a person who has secretly started abusing these drugs:

Dulled, slow thinking
Emotional instability, swinging from laughter to tears easily
Irritation, antagonism
Slurring, stumbling speech
Lack of motor control that can cause a person to drop items
Poor physical coordination[13,14,15]
Confusion
While a person in normal condition might be concerned with these changes, the sense of well-being and tranquility a person experiences because of the drug use may disable them from feeling this concern.

Unfortunately, if someone gets confused about how many pills they have taken, he (or she) may take more and unintentionally wind up with an overdose that kills him. Also, a person who is abusing barbiturates is also at greater risk of pneumonia or bronchitis as the drug affects the body's normal ability to breathe.

Who Seeks the Effects of Abusing Barbiturates?
There are four different types of people seeking the effects of barbiturate abuse and they have different reasons for doing so.

Youth may abuse barbiturates so they can experience the drunken feelings that result. They are not very likely to understand that this can be a deadly drug.
An adult who abuses stimulants may look for a barbiturate to help them come down so they can rest or appear "normal" to others.[16,17,18]
A person who is addicted to heroin or prescription opiates may seek barbiturates to give their dose of heroin more kick, or if they can't get their hands on opiates at the moment.
And a person who has been taking these drugs as prescribed may find that they have to increase their dosage to get the desired effects. They may get their doctor to increase their dosage as they build up a tolerance and so need more of the drug to get the same effect. Or if there is any problem with their doctor giving them the drug, they may seek other doctors to get the drugs they feel they now need. This puts them into a category of prescription fraud through "doctor-shopping," going from doctor to doctor, getting multiple prescriptions.

CONCLUSIONS

It's not the easiest thing to come off this drug so a person can get sober. Many people will need the support of close physician supervision, medical detox, or if he (or she) has really come to rely on the drug to get through the day, a complete rehabilitation program.

A person trying to get clean will start to hit withdrawal within 24 hours of the last dose. The effects of withdrawal include anxiety, insomnia, tremors, even delirium and seizures among heavy users. Some people will need to taper off this drug.

When the drug has finally been discontinued, the best thing the addicted person can do is to get the help of a thorough rehabilitation program that enables him to once again get control of his life. This is the role of the Narconon drug and alcohol rehab program for thousands of people each year.[19]

People come to Narconon for help with all kinds of drugs, from inhalants to alcohol to prescription drugs to club drugs and more. This is a thorough, eight to twelve-week program that never uses substitute drugs as part of treatment. It has been found that a person must learn to live a completely sober life for recovery to be lasting. Reliance on drugs like methadone, buprenorphine, suboxone or anti-drinking drugs do not really teach a person how to build a sober life. Nor do they allow him to learn what it feels like to be completely sober again.

The Narconon drug recovery program takes the idea of being drug-free a step further. Each person on this program will go through a deep detoxification phase called the Narconon New Life Detoxification. This is a process that involves time in a sauna, nutritional supplements, and

moderate daily exercise. This combination enables the body to start flushing out old drug toxins. Instead of each person carrying a burden of old drug residues, they can be flushed out on this program. The effect of this detox is clearer, brighter thinking, a better outlook on life and a greater ability to learn sober living skills.[20]

REFERENCES

1. Vaux, Bert and Scott Golder. 2003. The Harvard Dialect Survey Archived 30 April 2016 at the Wayback Machine. Cambridge, MA: Harvard University Linguistics Department.
2. Edward R. Garrett; Jacek T. Bojarski†; Gerald J. Yakatan (21 September 2006). "Kinetics of hydrolysis of barbituric acid derivatives". Journal of Pharmaceutical Sciences. 60 (8): 1145–54. doi:10.1002/jps.2600600807. PMID 5127086.
3. "DIGNITAS". Archived from the original on 9 October 2018. Retrieved 14 June 2011.
4. Whitlock FA (14 June 1975). "Suicide in Brisbane, 1956 to 1973: the drug-death epidemic". Med J Aust. 1 (24): 737–43. doi:10.5694/j.1326-5377.1975.tb111781.x. PMID 239307.
5. Johns MW (1975). "Sleep and hypnotic drugs". Drugs. 9 (6): 448–78. doi:10.2165/00003495-197509060-00004. PMID 238826. S2CID 38775294.
6. Jufe, GS (2007). "Nuevos hipnóticos: perspectivas desde la fisiología del sueño [New hypnotics: perspectives from sleep physiology]" (PDF). Vertex (Buenos Aires, Argentina) (in Spanish). 18 (74): 294–9. PMID 18265473. Archived from the original (PDF) on 26 February 2021. Retrieved 12 February 2017.Open access icon
7. Worthington, Ana; Finlay, Ilora; Regnard, Claud (9 July 2022). "Efficacy and safety of drugs used for 'assisted dying'". British Medical Bulletin. 142 (1): 15–22. doi:10.1093/bmb/ldac009. ISSN 0007-1420. PMC 9270985. PMID 35512347.
8. "Administration and Compounding Of Euthanasic Agents". Archived from the original on 7 June 2008. Retrieved 15 July 2008.
9. Daniel Engber (3 May 2006). "Why do lethal injections have three drugs?". Slate Magazine. Archived from the original on 6 November 2018. Retrieved 15 July 2008.
10. Brown, David (20 November 2006). "Some Believe 'Truth Serums' Will Come Back". The Washington Post. Retrieved 26 July 2023.
11. "Neuroscience for Kids – Barbiturates". Archived from the original on 16 June 2008. Retrieved 2 June 2008.
12. Stocks, JT (1998). "Recovered memory therapy: a dubious practice technique". Social Work. 43 (5): 423–36. doi:10.1093/sw/43.5.423. PMID 9739631.
13. Chang, Suk Kyu.; Hamilton, Andrew D. (1988). "Molecular recognition of biologically interesting substrates: Synthesis of an artificial receptor for barbiturates employing six hydrogen bonds". Journal of the American Chemical Society. 110 (4): 1318–1319. Bibcode:1988JAChS.110.1318C. doi:10.1021/ja00212a065.
14. "Barbiturates drug profile | www.emcdda.europa.eu". www.emcdda.europa.eu. Retrieved 22 December 2021.
15. "Wolf D. Kuhlmann, "Buffer Solutions"" (PDF). 10 September 2006. Archived from the original (PDF) on 9 November 2016. Retrieved 28 July 2014.
16. Steven E. Ruzin (1999). Plant Microtechnique and Microscopy. Oxford University Press. Archived from the original on 3 June 2019. Retrieved 28 July 2014.
17. "JaypeeDigital | Drugs Acting on Central Nervous System Sedative-Hypnotics, Alcohols, Antiepileptics and Antiparkinsonian Drugs". www.jaypeedigital.com. Retrieved 22 December 2021.

18. Skibiski, Jeanie; Abdijadid, Sara (2021), "Barbiturates", StatPearls, Treasure Island (FL): StatPearls Publishing, PMID 30969553, retrieved 8 July 2021
19. Nutt, D; King, LA; Saulsbury, W; Blakemore, C (24 March 2007). "Development of a rational scale to assess the harm of drugs of potential misuse". Lancet. 369 (9566): 1047–53. doi:10.1016/s0140-6736(07)60464-4. PMID 17382831. S2CID 5903121.
20. WebMD. "Toxicity, Barbiturate". eMedicine. Archived from the original on 20 July 2008. Retrieved 15 July 2008.