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Anesthesia and Drug Addicted Patients

Uyuşturucu Madde Kullanan Hastalarda Anestezi

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Abstract

In recent years, drug use has been increasing worldwide and in our country. This article aimed to raise awareness about the difficulties that clinicians may encounter in patients with substance addiction during anesthesia and the management of these difficulties. Drug use has short-term and long-term effects on all organs and systems. In addition, these substances interact with many drugs and can lead to unpredictable results. This situation is more complicated for anesthesiologists; many drugs from the barbiturate, narcotic, and hypnotic groups are used to provide amnesia, analgesia, and anesthesia, which are the basis of anesthesia practice. Patients who are addicted to drugs usually hesitate to share their substance use information with the clinician in the preoperative period. As a result, different clinical states occur due to possible drug interactions. Inferences about substance use are made by evaluating the clinical status of drug interactions in patients who underwent anesthesia without information about substance addiction. In patients with learned substance addiction; in order to prevent unexpected effects, it is necessary to know the interactions of the substance used with anesthetic drugs. In patients with drug addiction, it is important for clinicians to understand the interactions of anesthetic drugs with these substances. As a result; patients who use drugs are now more frequently encountered in anesthesia practice. Understanding the current drugs and their effects on the body may provide advantages in the follow-up and treatment of patients.

Keywords: Anesthesiology, anesthetic effects, cocaine, drug abuse, drug addiction, drug dependence, hallucinogens, LSD, methamphetamine

Öz

Son yıllarda, dünyada ve ülkemizde uyuşturucu madde kullanımının giderek artmaktadır. Bu yazıda, anestezi uygulamasında madde bağımlılığı olan hastalarda klinisyenin karşılaşabileceği zorluklar ve bu zorlukların yönetimi hakkında bir farkındalık yaratılması amaçlandı. Uyuşturucu madde kullanımının tüm organ ve sistemlere kısa ve uzun dönemde etkileri bulunmaktadır. Ayrıca bu maddeler birçok ilaçla etkileşmekte ve öngörülemeyen sonuçlara sebep olabilmektedir. Anestezistler için bu durum daha karmaşıktır; anestezi pratiğinin temeli olan amnezi, analjezi ve anesteziyi sağlamak için barbitürat, narkotik ve hipnotik grubu birçok ilaç kullanılmaktadır. Madde bağımlısı olan hastalar genellikle preoperatif dönemde madde kullanımı bilgisini klinisyenle paylaşmaktan çekinmektedir. Bunun sonucunda karşılaşılabilen ilaç etkileşimleri nedeni ile farklı klinik tablolar oluşmaktadır. Madde bağımlılığı hakkında bilgi sahibi olunmadan anestezi uygulaması yapılan hastada oluşan ilaç etkileşimleri ile oluşan klinik tablo değerlendirilerek madde kullanımı hakkında çıkarım yapılmaktadır. Madde bağımlılığı öğrenilen hastalarda ise; beklenmeyen etkilerin önlenmesi amacıyla kullanılan maddenin anestezik ilaçlarla etkileşimlerinin bilinmesi gerekmektedir. Uyuşturucu bağımlısı olan hastalarda anestezi yönetimi, anestezik ilaçların bu maddelerle etkileşimlerinin bilinmesi önemlidir. Sonuç olarak; günümüzde uyuşturucu madde kullanan hastalarla anestezi pratiğinde daha sık karşılaşılmaktadır. Güncel uyuşturucu maddeleri ve bu maddelerin vücuttaki etkilerini bilmek, hastaların takip ve tedavilerinde avantaj sağlayabilir.

Anahtar kelimeler: Anestezik etkiler, anesteziyoloji, halusinojenler, kokain, LSD, madde bağımlılığı, metamfetamin, uyuşturucu bağımlılığı

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Introduction

In recent years, drug use and its variety have been increasing. For this reason, the importance of knowing the effects of drugs on the systems and the points to be considered in anesthesia applications has increased in the follow-up of patients with drug addiction. Patients who use drugs often hide the drug they are addicted to, which puts anesthetists in a difficult situation and causes them to face various complications during the preoperative, intraoperative, and postoperative periods. Therefore, knowing the narcotic substances and the effects of these substances on the body in anesthesia applications will be advantageous for clinicians during follow-up and treatment of patients. This article aimed to raise awareness about the difficulties that clinicians may encounter in patients with substance addiction detected during anesthesia evaluation and the management of these difficulties.

Narcotic substances or drugs are chemical compounds and drugs that have pleasurable, calming, or stimulating effects and create a constant desire for higher doses, leading to withdrawal symptoms when discontinued (1).

Substance/drug addiction, on the other hand, is the state of not being able to overcome the constant desire to use the substance, even though its harmful effects are known.

Narcotic drug users experience relaxation and euphoria after drug use. Effects such as pleasure, satisfaction, a feeling of power, forgetting one's problems, and the disappearance of sexual problems make it difficult for the individual to quit the drug (2).

When the effect of the drug wears off, a feeling of hopelessness, unhappiness, loneliness, and guilt starts to take over. The other potential harms of narcotic drugs to the body are as follows (3-5):

- Psychological
  - Detachment from the social environment, inability to do work, reluctance, introversion, loneliness, apathy, excessive excitement, selfishness, loss of appetite, confidence, temperament changes, increased suicidal tendencies
- Central nervous system
  - Memory loss, insomnia, speech disorders, inappropriate behavior, decreased intelligence, and hallucinations consisting of sound and light.
- Digestive system
  - Nausea, vomiting, abdominal pain, diarrhea, constipation, stomach and bowel spasms
- Kidney and liver
  - Kidney and liver dysfunctions or failure
- Musculoskeletal system
  - Septic arthritis, rhabdomyolysis, osteomyelitis, and abscess
- Eyes
  - The drug user may feel discomfort with light, and night blindness may occur.
- Respiratory system
  - Shortness of breath and cough
- The use of common syringes or poor hygiene
  - Acquired immune deficiency syndrome (AIDS), hepatitis B and C infections.

Approach to Anesthesia

There are many narcotic drugs that we do not encounter in practical applications. We should be aware of the effects of these drugs even if we do not use them in practice. As anesthesiologists, it is important for us to have a thorough understanding of both narcotic drugs and their effects on the body. This knowledge will facilitate our management of patients during preoperative, postoperative, and emergency situations for those who use these drugs. Patients who use narcotic substances usually do not share this information with physicians during preoperative evaluation, which leaves physicians with various complications of these substances during the intraoperative period. The feeling of trust that can be established with the patient during the preoperative evaluation can encourage the patient to share information about their addiction.

Knowing the substance used by the patient will save the anesthesiologists time and enable them to take appropriate precautions against complications. These complications may be directly related to the effects of the substance or may be caused by the conditions of the addicts themselves. AIDS, hepatitis B, and C-like diseases can be observed among intravenous drug abusers, as well as local abscess formation and infective endocarditis. Tuberculosis-like infections are more common among malnourished addicts because of their relatively weak immune systems (3,5).

In addition to the type of surgical intervention to be performed in substance addicts, a detailed physical examination and necessary examinations for differential diagnosis should be requested. Electrocardiogram, posteroanterior chest x-ray, blood tests for liver enzymes, creatinine, creatinine kinase, and troponin are among those.

Venous thrombosis is common in intravenous substance addicts (6). In chronic drug addicts, inhalation anesthesia can be used as the method for anesthetic induction because it is difficult to find vascular access due to thrombosis. The use of a central venous catheter may also be another reason for preference. Because these patients may potentially abuse the central venous catheter, its removal at the end of the operation should be carefully considered.

Various additives are added to narcotic substances to increase their production, reduce their cost, and thus increase their profit. Cocaine is mixed with lidocaine to take advantage of its similar effect on the nasal mucosa. Due to the addition of talcum powder as a cost-cutting additive, ventilation perfusion incompatibility and pulmonary hypertension can occur in the lungs (7).

Sedative substances reduce the minimum alveolar concentration (MAC) of inhaled anesthetics, whereas stimulant substances have the opposite effect (3). MAC adjustment should be made taking into account the substance used by the patient. Risk of substance abuse should be considered in patients who require intravenous and inhalational anesthetic drugs.

Cocaine causes coronary vasospasms and increases cardiac oxygen demand (8). Cocaine addiction should be investigated in young patients with chest pain.

Ecstasy is a serotonergic substance. Other sympathomimetic drugs should be avoided in such patients. Serotonin can cause severe serotonin syndrome. Death may occur as a result of rhabdomyolysis, hyperthermia, and dehydration (9). Thus, dandrolene and cooling measures should be prepared. In these patients, dehydration and excessive water consumption may cause hyponatremia. Cerebral edema and death may occur due to rapid changes in blood sodium levels. Because of its quick impact, sodium levels can be quickly restored to normal using hypertonic saline solutions (10).

Withdrawal syndrome may occur due to preoperative withdrawal from drugs such as heroin, alcohol, and tobacco. In the babies of addicted pregnant women, withdrawal syndrome-like effects can be observed at rates as high as 60% at birth. Milder symptoms are observed in alcohol and tobacco addicts. These symptoms can include a variety of symptoms, such as a strong desire for a particular substance, anxiety, depression, insomnia, agitation, tendency toward violence, hallucinations, tachycardia, hypertension, sweating, nausea, vomiting, abdominal pain, and diarrhea. Symptoms regress with preintake of the substance (11-13).

It should be remembered that there may be adjustment disorders in patients with substance abuse scheduled for local anesthesia, and caution should be exercised during the procedure.

Choosing patient-controlled analgesia for postoperative analgesia can prevent pain-related agitation and reduce the possibility of withdrawal syndrome.

Due to late complications and withdrawal syndrome that may occur in the postoperative period, patients should be transferred to postoperative care units (PACU) or intensive care units where follow-up and treatment can be carried out by monitoring.

Below, we will provide some information about frequently used narcotic drugs, their effects on the body, and the issues that should be considered by anesthesiologists.

Classification of Narcotic Substances

- **Narcotics**
  - Morphine
  - Heroin
  - Methadone
  - Codeine
- **Stimulants**
  - Amphetamines
  - Cocaine
  - Caffeine
  - Nicotine
- **Depressants**
  - Barbiturates
  - Alcohol
  - Methaqualone
  - Meprobamate
  - Diazepam
  - Chlordiazepoxide
- **Hallucinogens**
  - Marijuana

Lysergic acid diethylamide (LSD)

Phencyclidine

Ecstasy

- **Solvents**

Thinners and alike

Lately, the increasing use of narcotics and the variety of narcotic substances have gained attention regarding the effects of substances on organ systems and the issues that we need to pay attention to in our anesthesia applications for drug addicts. Here we will talk about the drugs that we often encounter and their effects.

Marijuana and Cannabis

Marijuana, as commonly called, is a plant and drugs that are made from that plant that induce intoxication and pleasure among the users (Figure 1,2). Other names include "weed," "joint," "rip," "powder," "geezer," and "hemp". It is the most common narcotic substance found worldwide and in our country as well (14,15). Cannabis is prepared from the flowering bud area, leaves, and stems of the marijuana plant in powder or liquid form. The active ingredient is "tetrahydrocannabinol".

For medical purposes, cannabis can be used during chemotherapy or radiotherapy sessions for psychiatric diseases, neurological diseases, AIDS, and various eating disorders (16).

The use of marijuana in low doses induces sympathetic activation. Its parasympathetic effect decreases. Heart rate and cardiac output increase (17). The effect of the anesthetic agent is potentiated. Drugs that increase heart rate, such as ketamine, pancuronium, atropine, and epinephrine, should be avoided. Strong inhalation agents can also cause deep myocardial depression if used. The use of moderate- and high doses cause a sympathetic block. There is no parasympathetic effect. It can perform relative parasympathetic dominance. It may cause bradycardia and hypotension. It can also cause supraventricular or ventricular arrhythmias. ST segment and T-wave abnormalities can be observed (3,8).

Cross-tolerance may develop between marijuana and alcohol, barbiturates, opioids, benzodiazepines, and phenothiazines (3). When used in the form of inhalation, upper airway irritation, lung epithelial dysfunction, bronchial damage, chronic cough, bronchitis, emphysema, and bronchospasm can be observed. It should be considered that oropharyngitis and acute upper airway edema may occur in patients undergoing general anesthesia. The use of prophylactic dexamethasone may be beneficial in such patients (18).

Although it has no proven teratogenic effects among pregnant women, in cases of chronic use, it may cause uteroplacental circulatory disorders, intrauterine growth

Figure 1. Marijuana plant. (quated from Salihoğlu Z, Anesthesiain the Drug-Using Patient. İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Anesthesiology and ReanimationResidents' Traning Seminar 2013)

Figure 2. Indian hemp plant and powdered version. (quated from Salihoğlu Z, Anesthesiain the Drug-Using Patient. İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Anesthesiology and ReanimationResidents' Traning Seminar 2013)

retardation, low neonatal birth weight, and mental retardation (19).

Cocaine

Cocaine is an alkaloid extracted from the leaves of the Erythroxylum coca plant (Figure 3). In the 1100s, the Incas used their cocaine-filled saliva as local anesthesia in their trepanation (drilling a hole in the skull) rituals.

It was first isolated from coca leaves in Germany in 1859 by Albert Niemann. Its use in surgery was realized by William Steaward Halsted in 1880. In 1884, it was used as a local anesthetic for eye operations. Then, it was put on the market by pharmaceutical companies for medical use in the treatment of toothaches (Figure 4). It was allowed to be used for recreational purposes in the United States until it was restricted by medical authorities in 1914. It has no medical use as of today (20).

Due to its low molecular weight and high lipid solubility, cocaine diffuses easily between lipid membranes. Because it cannot be metabolized, its damage is permanent. A type of enzyme that metabolizes cocaine is present in bacteria that live in the vicinity of cocaine source plants that use cocaine as its only source of carbon and nitrogen. Cocaine esterase is only slightly stable at body temperature. Derivatives have been produced that have been modified to remain stable at body temperature (21-23).

It has stimulating and addictive properties in the central nervous system. It prevents the reuptake of dopamine, norepinephrine, and serotonin. Severe hypertension may occur during laryngoscopy. To reduce this complication, nitroprusside, nitroglycerin, and calcium channel blockers, hydralazine, can be used. Because esmolol and similar β-blockers increase cocaine-induced coronary vasoconstriction, the use of β-blockers such as propranolol, is contraindicated (21). Hypertension, hypotension, and arrhythmias may be observed among cocaine users during general anesthesia (24). Cocaine-associated myocardial ischemia is due to coronary artery vasoconstriction and/or increased platelet aggregation leading to thrombus formation. For prevention, phentolamines, nitroglycerin, verapamil, benzodiazepines, thrombolytic therapy, and aspirin can be used (25).

Platelet count changes associated with cocaine use may be associated with platelet activation due to vasospasm and autoimmune response. These factors may cause thrombus formation (3). Even after a long period of non-use of cocaine, its negative effects on the cardiovascular system persist. Cocaine use is an important cardiac risk factor.

Infections (tuberculosis, AIDS, Staphylococcus aereus), aspiration pneumonia, lung abscess, septic embolism, pulmonary edema, barotrauma, pneumonic lung infiltrates, vasculitis, pulmonary infarction, pulmonary hypertension, and gas exchange disorders may occur in the respiratory system due to cocaine use (26).

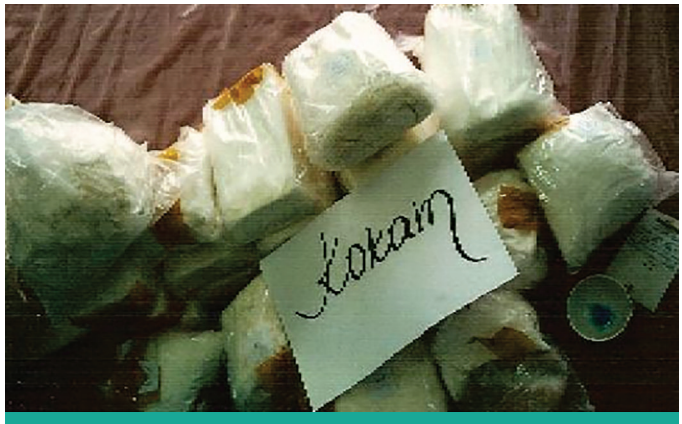

Figure 3. Sample of cocaine in powder form. (quated from Salihoğlu Z, Anesthesiain the Drug-Using Patient. İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Anesthesiology and ReanimationResidents' Traning Seminar 2013)

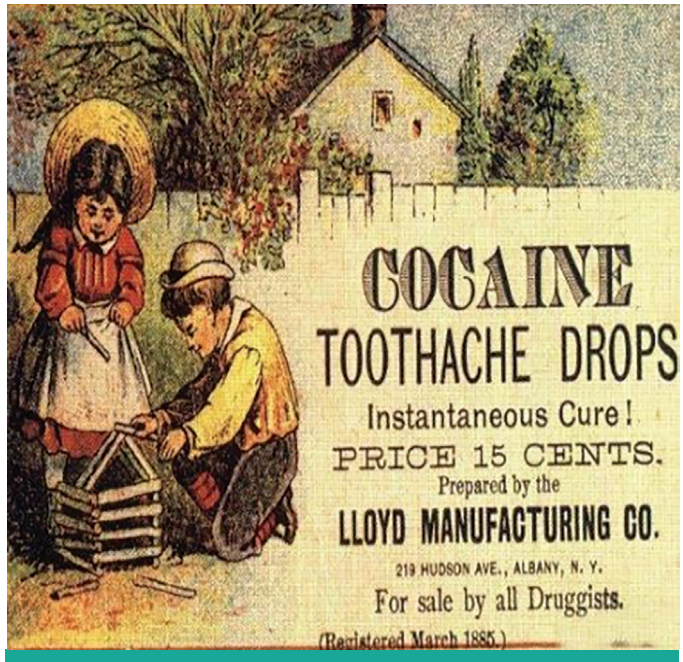

Figure 4. Cocaine drip advertisement aimed at reducing toothache. (quated from Salihoğlu Z, Anesthesiain the Drug-Using Patient. İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Anesthesiology and ReanimationResidents' Traning Seminar 2013)

Acute renal failure may also develop due to vasospasm induced by cocaine or rhabdomyolysis (27).

Emergency childbirth is seen 4 times more among patients using cocaine (3). The negative effects of cocaine on the cardiovascular system increase over time. Increased oxygen demand and limited or decreased oxygen delivery are observed due to increased heart rate, blood pressure, and left ventricular contraction. As a result of decreased uteroplacental blood flow after rapid uteroplacental diffusion, uteroplacental insufficiency, acidosis, and hypoxia may occur. As a result of these effects, placental separation, premature birth, hypertension, and death in the womb can occur. Chronic cocaine addiction can cause permanent biochemical and functional changes in the fetus (28).

Changes in pain perception and aggressive behaviors may be encountered among cocaine addicts under local anesthesia because of changes in μ and K opioid receptor density and abnormal endorphin levels (29).

Ketamine should be used with caution or not used at all, as it can stimulate the central nervous system and amplify cardiac effects.

Amphetamine-methamphetamine (alpha-methylphenethylamine)

They are sympathomimetic substances of a synthetic nature and are most commonly found in oral intake form. When methamphetamine use is evaluated globally, it is seen that its use has spread and seriously threatens global health (30). In the 1930s, they were used medically to improve physical and mental performance (31). Due to their use in the treatment of attention-deficiency disorder and hyperactivity disorder, they are substances that are easy to access illegally. They are frequently used as stimulants among long-haul drivers, athletes, and students. As a result of its long-term use, people may develop physical and psychological dependence. In pregnant women, hypertension and proteinuria, which may be accompanied by epilepsy-like seizures, may result from acute intake of amphetamine (32). This condition can be confused with pre-eclampsia or eclampsia.

Ecstasy

Its chemical name is 3,4-methylenedioxy-N-methylamphetamine (MDMA). It is similar to both stimulants (amphetamines) and hallucinogens. MDMA was developed in 1912 by a German pharmaceutical company with the purpose of creating a hemostatic drug. It was first reported as a narcotic by the Drug Enforcement Administration in 1985 (33). Tablet or capsule forms are available (Figure 5). It is an effective serotonergic agent. Its effect starts 20-60 minutes after intake and lasts for an average of 4-6 hours. This period can last up to several days. It can cause increased mobility, interest in the opposite sex, increased energy, confidence, and perception changes in users. The side effects of ecstasy include increased blood pressure, tachycardia, intravascular coagulopathy, liver failure, impaired coordination, and fluid and electrolyte disruption. Sudden death may also develop because of the added substances. When used at high doses, it can trigger malignant hyperthermia. Severe hyponatremia and cerebral edema may occur due to excessive sweating and increased water consumption (9).

Opioids

The attractive features of this type of substance are its analgesic and euphoric effects. Rapid tolerance to these substances develops quickly. With the ever-increasing use of drugs, physical dependence, psychological dependence, and acute withdrawal syndrome may develop. During acute withdrawal syndrome, various symptoms, such as restlessness, insomnia, tachycardia, tachypnea, and hypertension, may be observed (9). These substances can be taken orally, subcutaneously, or intravenously (Figure 6).

Morphine, codeine, meperidine, fentanyl, methadone, and heroin are some of the opioids that are commonly

Figure 5. Various samples of ecstasy. (quated from Salihoğlu Z, Anesthesiain the Drug-Using Patient. İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Anesthesiology and ReanimationResidents' Traning Seminar 2013)

abused. Morphine is the most well-known among them. It is produced from opium. Heroin, also known as diamorphine, is a semi-synthetic opiate alkaloid produced from morphine (34).

It is a substance with a very high addictive potential. Even a single intake over a short period is enough to experience severe withdrawal syndrome. The metabolite of heroin crosses the blood–brain barrier faster than morphine. Pain tolerance may decrease because of decreased endogenous opioid production. These patients may experience exaggerated pain after surgery. Methadone is a synthetic opioid that prevents effects such as euphoria and depression in acute withdrawal syndrome. Reduced desire for the substance allows the addict to be re-introduced into society (35).

Opioid addicts should not receive opioid antagonists or agonist antagonists. They can manifest an acute withdrawal syndrome. Symptoms of acute withdrawal syndrome may emerge seconds after naloxone administration. Diphenhydramine, doxepin, and clonidine can relieve these symptoms (3).

Hemodynamic instability is observed in addicts. Vascular access can be difficult to establish. After acute opioid use, the MAC and required doses of anesthetics can decrease. However, after chronic opioid use, cross-tolerance to

Figure 6. Heroin hydrochloride, which was released to the market by the Bayer pharmaceutical company in the 1900s. (quated from Salihoğlu Z, Anesthesiain the Drug-Using Patient. İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Anesthesiology and ReanimationResidents' Traning Seminar 2013)

antidepressants and barbiturates may develop. Propofol may be preferred because the thiopental dose may increase. In such patients, local anesthesia may be preferred for postoperative pain control. Hypotension and discitis may be more common in patients receiving local anesthesia than in normal patients.

Many diseases such as tetanus, botulism, human immunodeficiency virus (HIV)/AIDS, hepatitis B, hepatitis C, pneumonia, endocarditis, osteomyelitis, peptic ulcer, and skin infections can be diagnosed among heroin users. These diseases can occur due to the effects of the substance itself, poor hygiene conditions, and use of common syringes with other addicts. HIV is a neurotropic virus. In the presence of HIV-induced central nervous system infection, progressive demyelinating disease, and neurological deficits, local anesthesia may be contraindicated (36-39).

In substance users, due to malnutrition and decreased intravenous fluid, fluid replacement and drug dose adjustment may be required for patients under anesthesia.

Barbiturates

It has sedative and hypnotic effects as a central nervous system sedative. The first barbiturate was produced in Germany by Emil Fischer in 1902 (40). They can lead to physical and psychological dependence. They can cause personality disorders and brain damage.

Benzodiazepine

It is a central nervous system depressant. The first benzodiazepine chlordiazepoxide was discovered by chance in 1955. It was made available as diazepam in 1960 (41). It has sedative, hypnotic, anxiolytic, and anticonvulsant effects. Because they can cause anterograde amnesia, they can be used for sexual assault purposes (39).

Its effect starts within 30 minutes after intake. Reaches its peak level within 1-2 hours and its effects can last up to 10 hours. They potentiate the effects of alcohol and opioids. When taken together with these substances or in the presence of excessive use, they can cause death.

Hallucinogens

These substances cause visual and tactile sensations of living or inanimate objects that do not actually exist. LSD, phencyclidine, mescaline, ecstasy, and magic mushroom are the most well-known (Figure 7, 8). LSD was synthesized by Dr. Albert Hofmann in the late 1930s from ergotamine,

which is found in the fungus Claviceps purpurea (42). They can be found on the market in liquid, impregnated on paper, gel, powder, or powder forms. They are colorless, odorless, and tasteless.

The acute effects begin within 20 to 60 minutes of intake and can last up to 6-12 hours. They activate the sympathetic nervous system. They can cause hypertension and tachycardia, leading to increased body temperature. They can cause sudden mood swings. Users of such substances may suddenly start crying immediately after laughing. They can cause increased mobility, interest in the opposite sex, increased energy, confidence, and perception changes in users (43).

Figure 7. Various examples of hallucinogens used on the market. (quated from Salihoğlu Z, Anesthesiain the Drug-Using Patient. İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Anesthesiology and ReanimationResidents' Traning Seminar 2013)

Figure 8. LSD (Lysergic acid diethylamide) sample. (quated from Salihoğlu Z, Anesthesiain the Drug-Using Patient. İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Anesthesiology and ReanimationResidents' Traning Seminar 2013)

Anesthesia is extremely risky due to autonomic dysregulation, cardiomyopathy, large changes in blood pressure, and tachycardia caused by these substances. The risk of cerebral and coronary vasospasm is high. Arterial vasospasm, arrhythmia, myocardial ischemia, myocardial infarction, and non-hemorrhagic cerebral vascular events may be observed among users of these substances (44). Vasopressors such as ephedrine should be used with caution due to their exaggerated response to sympathomimetics.

Severe hyponatremia and cerebral edema may occur due to excessive water consumption by ecstasy users. Therefore, the fluid and electrolyte balances should be carefully evaluated. The reduced plasma cholinesterase activity prolongs the effect of succinylcholine. The effect of anesthetic substances metabolized in the liver and kidney may be prolonged due to fat accumulation in the liver and acute renal failure. Sudden death may also develop due to the presence of additives (45).

Solvents

Solvents are cheap, readily available, and legal substances that can affect the central nervous system. Thinner, acetone, household paints, glues, rubber, lighter gas, cement, and cleaning agents may contain solvents.

Dizziness, temporary euphoria, and hallucinations may be experienced after use. Due to its euphoria-inducing property and easy accessibility, it is used more frequently by adolescents. Cardiac arrhythmias, myocardial ischemia and infarction, blood pressure changes, bronchial damage, liver toxicity, methemoglobinemia, acute respiratory distress syndrome, pulmonary hypertension, acidosis, cerebral or pulmonary edema, and consequential death may occur in solvent abusers (46). Chronic use may cause permanent changes in the central nervous system. Degeneration and widespread brain atrophy are observed (47). Local anesthesia may be risky due to altered perception and aggressive behavior.

Bonsai

It is a synthetic drug. It is a psychoactive substance with marijuana-like effects. Bonsai, which was introduced for sale in 2004 as an alternative to marijuana, is also known as synthetic marijuana. Their effects may constantly change because their content is constantly changing to enable users to evade drug tests. More than 100 substances, including rat poisoning and fluorescent powder, were detected. The most common effects are dry mouth, tachycardia, hypertension,

heart attack, restlessness, impaired perception, vomiting, hallucinations, convulsions, paranoia and anxiety (48). The condition can cause sudden cardiac arrest (49).

Because tolerance develops rapidly, addiction can be formed within a short period of time. The fact that it is cheap and easily accessible has caused its widespread use, especially among adolescents.

In 2014, a study by Mutlu et al. (50) conducted on 1877 healthcare workers, titled "the perspective of healthcare workers about addiction", it was revealed that the most frequently used substance was cannabis (1%). Benzodiazepines, meperidine, and methylphenidate were the other preferred substances.

According to the 2021 Report of the European Monitoring Center for Drugs and Drug Addiction (EMCDDA), which includes Turkey, 28.9% (83 million) of adults (aged 15-64) have used illicit drugs at least once in their lifetime. Substance use experience is more common among men (50.6 million) than among women (32.8 million). The most commonly experimented narcotic substance is cannabis. Opioids have been detected in 76% of fatal overdoses. 5.5% of new HIV diagnoses were attributed to intravenous drug use. The most commonly used stimulant is cocaine. The second stimulant that comes in second is amphetamine. 90% of the reported patients treated for methamphetamine addiction were citizens of Germany, Slovakia, Turkey, and the Czech Republic. Amphetamine-related deaths were reported by Germany (124), Finland (48), Slovakia (13), Austria (13), Czech Republic (12), and Turkey (55) in 2019. Deaths from synthetic cannabinoids continue to decrease in Turkey. In 2019, over 400 new psychoactive substances were found in the European drug market. In 2020, the EMCDDA monitored approximately 830 new psychoactive substances in Europe, of which 46 were reported for the first time (51).

Conclusion

As a result; due to the increasing variety of narcotics and their easier accessibility, the frequency of encounters between anesthesiologists and patients using narcotics is increasing. The interactions between addictive and anesthetic drugs can lead to critical clinical conditions in all organs and systems. In the coming years, with the development of technology, more varieties of synthetic narcotics will be on the market. More comprehensive studies on the interactions of new or commercially available addictive substances with various drugs. In addition; during the preoperative period in anesthesia practice, it is important to increase the awareness of anesthesiologists about addiction and to perform anamnesis without prejudice. In this way, both anesthesiologists will provide safer and easier perioperative patient care, follow-up, and treatment, and the patient will have a more comfortable perioperative process.

Ethics

Footnote

Authorship Contributions

Concept: S.B.B., G.A., A.E., Y.Ö., K.E., Z.S., Design: S.B.B., G.A., A.E., Y.Ö., K.E., Z.S., Data Collection or Processing: S.B.B., G.A., A.E., Y.Ö., K.E., Z.S., Analysis or Interpretation: S.B.B., G.A., A.E., Y.Ö., K.E., Z.S., Literature Search: S.B.B., G.A., A.E., Y.Ö., K.E., Z.S., Writing: S.B.B., G.A., A.E., Y.Ö., K.E., Z.S.

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