Forensic Aspects of Drug-Induced Violence

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Abstract
Violence is unfortunately a part of society. The causes of violence are not completely understood, but it involves sociological, genetic, financial, biological, and environmental factors. Drugs can cause aggression by altering the neurotransmitters dopamine, norepinephrine, gamma-aminobutyric acid (GABA), and serotonin. Specific drugs associated with aggression include alcohol, anabolic steroids, cocaine, amphetamines, sedatives, opiates, and hallucinogens. Aggression can be categorized into impulsive and predatory aggression. Drugs under certain conditions cause impulsive aggression. Sometimes a defense in criminal cases is that the drug caused the violence, that is drug-induced insanity. A case of insanity is more likely to be accepted if the event was unplanned and had no apparent motive. An acceptance of insanity by voluntary intoxication is rarely accepted by the criminal justice system. A more common legal strategy is to seek diminished capacity which aims to obtain a reduction in the severity of the criminal charges. We will discuss some, but not all of the pharmacological and physiological issues relating to drug-induced violence. Then some of the "big picture" forensic issues will be presented. Our goal is to present a primer on the pharmacological and forensic issues relating to drug-induced violence. No attempt was made to provide a comprehensive review of all the literature related to drug-induced violence.

Keywords
forensic, violence, aggression, psychopharmacology, insanity

Introduction
A wide variety of chemicals can alter human behavior including over-the-counter medications, prescription medications, drugs of abuse, and toxicants. Drug-induced behavior changes and aggression has been used as a defense in criminal trials.1 Utilization of this defense can occur over a broad range of areas from drug-induced insanity to being a mitigating factor in sentencing.2 Drugs that have been associated with aggression include anabolic steroids, amphetamines, barbiturates, cocaine, ethanol, opiates, hallucinogens, and phencyclidine (PCP).3 Mechanisms of drug-induced aggression included impairing mechanisms that inhibit inappropriate behavior, causing temporal lobe seizures, drug-induced depression, hallucinations, akathisia, mania, or paranoia. Drugs can also distort perception and impair judgment which can further result in behavioral toxicity.4 Other pharmacological properties that can promote aggression are pain relief, anxiety provoking traits, and hypoglycemia.5

Drug-induced violence against other persons drug-induced aggression or can be aggression against oneself, as manifested by suicide or suicide attempts.4 For example, the drug isotretinoin (Accutane) has been linked to many suicides.6 An increase in dopamine appears to increase the likelihood of aggression. Additionally, selective serotonin reuptake inhibitors (SSRIs) have been associated with suicidal ideation in children and adolescents. This can result in litigation against manufacturers, prescribers, and pharmacists.7 Specifics related to drug-induced suicidal ideation is beyond the scope of this article and not be discussed. Drugs can contribute to crimes in many ways.8 For example, it is unlawful to manufacture, possess, or use a controlled substance unless for legitimate use as regulated by the Food and Drug Administration (FDA) and the Drug Enforcement Administration. Individuals improperly using drugs can have withdrawal reactions from drugs of abuse which may lead to crimes involving robberies or stealing to obtain money to buy drugs. Drug dealers may also use violence as a strategy to get rid of competition. The focus of this article will be on how drugs can induce violence in defendants and, more specifically, on interpersonal violence facilitated by the direct pharmacological effects of drugs—that is, how intoxication can impair a person and cause them to lose control of themselves, This is often referred to in the lay media as an individual falsely perceiving that what he or she did was not wrong. Hoaken and Stewart define aggression as "any form of behavior directed toward the

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goal of harming or injuring another being who is motivated to avoid such treatment. The terms violence and aggression are often used interchangeably in society. In clinical practice and research studies the term “aggression” is used more often. In forensics and in the criminal justice system, the term “violence” is more commonly used. In this article the words aggression and violence will be used as synonyms. Finally, it is important to note that drug-induced violence can be quite variable and involve anything from road rage, assault, domestic abuse, and murder.10-12

Types of Aggression
Aggression can be classified into premeditated (predatory) or impulsive (affective) aggression.13 Premeditated aggression involves planning, is not an immediate response to a frustration, and has clear goals in mind. Impulsive aggression involves a lack of planning, precipitation by an immediate frustration, and may not have clear goals in mind. It typically results from a perceived stressful situation.13 Impulsive aggression is often related to motor reactions (fight or flight response) to a perceived threat. Everyone has the fight or flight response to dangers. In impulsive aggression the act of violence is often an overreaction to environmental stressors. The individual reactions to stressors may demonstrate a disregard of the consequences of the aggressive actions. The stimulus can be visual, auditory, tactile, or another sensory. Drugs and metabolic abnormalities can alter an individual’s sensory perceptions and thereby increase the likelihood that a stimulus is perceived as dangerous or provocative leading to aggression.

Predatory aggression is usually associated with Antisocial Personality Disorder.14 Characteristics of Antisocial Personality Disorder include manipulative traits, lack of empathy, shallow affect, and pathological lying.13 These individuals tend to ignore laws and moral standards. It is important to note that individuals with Antisocial Personality Disorder lack delusional or psychotic manifestation often seen with psychiatric conditions such as schizophrenia or bipolar disorder. With the exception of individuals with Antisocial Personality Disorder, most aggression is impulsive.13 This is not to say persons with Antisocial Personality Disorder cannot have episodes of impulsive aggression. Specifically, as previously noted, predatory aggression is associated with premeditation.14 Predatory aggression is more cognitive, whereas affective aggression is more emotional. Affective aggression is preceded by a surge in the sympathetic nervous system, whereas predatory aggression is not.15

Problems With the Literature
The vast majority of cases of drug-induced violence are from case reports rather than controlled clinical studies. These case reports are often not reported in the scientific literature but presented in case law or the public media. As with any case report there are problems with recall bias, confounding factors, and lack of a controlled environment. Additionally, with forensic case reports there is often bias because the defendant or the defense lawyer desires a finding of not guilty, which may slant the ways the facts and opinions are presented in the report.

A number of epidemiological studies suggest that drugs can induce aggression, unfortunately many fundamental limitations exist in these types of studies linking crime to drugs. Most crimes are the result of a combination of factors such as economic, cultural, genetic, environmental, and interpersonal.8,13 Even when the drug is the cause it is often one of many factors that played a part in the event.8 The definition of “drug related” varies from study to study and among individuals. Many epidemiological studies rely on urine testing for drugs of abuse. Standard urine tests are often limited to a handful of substances.16 Certain substances, such as lysergic acid diethylamide (LSD), are difficult to detect by standard urine drug testing methods.16 Additionally, reports by offenders may minimize or exaggerate the contribution of drugs to the given crime, leading to complications in reporting. Most forensic cases involve illicit drugs rather than prescription drugs. These drugs often come from clandestine sources, so the purity and authenticity of the substances cannot be certain. Direct human studies related to drug-induced aggression are limited and animal studies may provide as background information as to whether a drug can cause violence, for example cocaine.17

Psychiatric conditions associated with criminality include delirium, delusional disorder, dementias, impulse control disorders, bipolar disorder, depression, schizophrenia, schizoaffective disorder, paraphilias, and traumatic brain injury.18 It is important to emphasize that most persons with mental illness are not violent and just having a diagnosis does not create additional risk for aggression. One could extrapolate that if a drug causes delirium or delusions (especially paranoid delusions) then it could result in violence. Unfortunately, mental illness is often a confounding factor in case reports both clinical and forensic. Mental illness may or may not be addressed in epidemiological studies.

The majority of epidemiological studies have evaluated the role of drugs in the perpetrators of violent acts. Some studies have examined psychoactive substance use in victims, rather than the perpetrator. For example, one study examined the role of psychoactive studies in homicide victims. This study reviewed 485 homicide cases.19 Approximately 66% of the victims had psychoactive substances present and the frequency of illicit substances was 33%. Ten percent had multiple substances. The mechanism behind a higher incidence of substance use in victims includes disinhibition (eg, provoking the attacker) or increased vulnerability.19 Beech and Mercadel evaluated 63 patients who had abdominal stab wounds.12 They found that 84% had alcohol detected and 63% had alcohol levels above the legal limit for driving. The authors speculated that victims may be more vulnerable to crimes from the impairing effects of alcohol.12
**Pathophysiology of Aggression**

Neurotransmitters involved with aggression include serotonin, epinephrine, dopamine, norepinephrine, acetylcholine, and gamma-aminobutyric acid (GABA). More recent research suggests substance P plays a role in both defensive aggression and predatory aggression. Aggression has been related to multiple parts of the brain including the temporal lobe, the frontal lobe, and the limbic system. The temporal lobe is involved with memory, auditory perception, speech, and visual perception. Temporal lobe epilepsy is a well-known cause of violence. The frontal lobe of the brain is involved with executive functions such as planning and organizing. The frontal lobe, the temporal lobe, the frontal lobe, and the limbic system. The temporal lobe is involved with memories, emotions, reward, and fear, social functions, and attentional processing. The temporal lobe and limbic system share some structures and can integrate with each other leading to aggressive tendencies.

Murderers with a history of impulsive aggression have shown decreased levels of glucose metabolism in the prefrontal cortex and increased levels of glucose metabolism in the right subcortex. Additionally, murderers, with a history of predatory aggression show normal levels of glucose metabolism in the prefrontal cortex and have high levels of glucose metabolism in the right subcortex. This suggests that impulsivity aggression may be more responsive to pharmacotherapy because more targets in the brain are available that can be altered pharmacologically. Likewise, this suggests drugs could cause impulsive aggression but not predatory aggression. One could argue that an intact frontal lobe is needed for elaborate planning of violent actions.

Drugs which increase serotonin have been shown to increase a person’s tolerance to stress. Decreased levels of serotonin can lead to aggression. Increased dopamine and norepinephrine have been associated with aggression. Unfortunately, these generalizations are not clear-cut and not necessarily applicable in all cases. SSRIs have been used to decrease impulsive aggression. However, manic episodes precipitated by an SSRI can present as aggression. Elevated dopamine activity in the brain can result in paranoia and thus aggression. Other neurotransmitters associated with aggression include GABA, acetylcholine, and glutamate. Often a reduction of GABA is usually associated with aggression. In contrast, increased acetylcholine and glutamate can result in aggression.

A detailed discussion on the various pharmacological treatment approaches for aggression is beyond the scope of this article. Certain illustrative examples have been and will be mentioned for the purposes of demonstrating the neurotransmitters involved with aggression. Drugs that are used to treat aggression include antipsychotics, mood stabilizers, antidepressants, beta-blockers, and benzodiazepines. Antipsychotics treat aggression by blocking dopamine. Antidepressants treat aggression by increasing serotonin. Beta-blockers block norepinephrine, as does clonidine. Benzodiazepines treat aggression by increasing GABA. Carbamazepine treats aggression by stabilizing the temporal lobe.

Specific drugs that can cause or contribute to aggression will be discussed in this article. The literature related to drug-related violence is enormous and information regarding drug-related violence is found not only in pharmaceutical and medical literature but also in publications relating to criminal justice, law, psychology, and substance abuse. We will discuss some, but not all of the pharmacological and physiological issues relating to drug-induced violence. Additionally, we will then discuss some of the “big picture” forensic issues related to aggression. Our goal is to present a primer on the pharmacological and forensic issues relating to drug-induced violence. No attempt was made to provide comprehensive review of all the literature related to drug-induced violence.

**Prescription Drugs**

A study published in January 2011 *PloS One* examined the prescription drugs believed to cause violence. The authors reviewed the FDA database for a 69-month period. They used the key word homicide, physical assault, physical abuse, homicidal ideation, and violence-related symptom. The researchers omitted reports that merely listed as “crime” or “spousal abuse.” In order for a drug to be listed in the study, at least 5 separate cases of violence had to be reported. During the 69-month period 780 169 cases of all types of serious adverse reactions were recorded. Of these 1937 met the violence criteria and 31 drugs were listed as meeting the criteria of drug-induced violence. The mean age of the patients was 36 years of age. Over half the population was male (59%) with females being 41%. The most common drug reported was varenicline (Chantix) followed by the SSRIs fluoxetine and paroxetine. Amphetamines were listed fourth on the list. The most common antipsychotic associated with violence was aripiprazole (Abilify) followed by ziprasidone (Geodon). The only mood stabilizer associated with an increased risk of violence was levotiracetam (Keppra). Interestingly, aripiprazole was the most common antipsychotic associated with violence. Most of the commercially available antipsychotics work as antagonists at dopamine receptors. Aripiprazole works slightly different, it is a partial agonist at the dopamine receptors. This leads to the theory that perhaps in some people the partial activation of the dopamine receptors results in violent actions. It is interesting to note that exogenous testosterone products were not detected in this study. Perhaps this is because the doses used in illicit situations (ie, performance enhancing) are of much higher doses than the prescribed regimens. Cholesterol-lowering drugs were not detected in the study. There has been...
discussion in the literature about whether low cholesterol levels can contribute to aggression.27

In another report, a case–control study was conducted of a French database to examine the association with prescription drugs and violence.28 The authors found an association between dopaminergic agonists (pergolide, pramipexole, and bromocriptine), benzodiazepines, serotonergic antidepressants, varenicline, isotretinoin, interferon alpha 2-B, and antiviral drugs (ribavirin and efavirenz), leading to increased violence.

**Benzodiazepines**

As previously noted, GABA is a major inhibitory neurotransmitter in humans and other mammals. Benzodiazepines enhance GABA transmission by altering the ability to open chloride channels in the affected neurons. The primary affects of benzodiazepines include sedation, anxiolytic effects, and anticonvulsant effects. One specific benzodiazepine, flunitrazepam (Rohynol), although not commercially available in the United States, is well known as a “date-rape” drug.

Clinical uses of benzodiazepines include generalized anxiety, phobias, bipolar disorder, insomnia, preoperative sedation, muscle spasms, and as a chemical restraint. Benzodiazepines are generally considered to have calming effects. However, paradoxical reactions can occur.29 Gaillard and Hemras describe a case of a woman who murdered her husband with a chopper. She was taking an unspecified benzodiazepine to treat the negative symptoms of schizophrenia.30 Additionally, it was noted that the patient had orbitofrontal damage in the brain, which may have made her prone to the disinhibition reaction. The paradoxical reaction observed may be from disinhibition since benzodiazepines may interfere with the anxiety/threat detection system. Risk factors for disinhibition can include high levels of preexisting hostility and preexisting brain damage (eg, frontal lobe).

Daderman and colleagues describe 5 cases of persons who become violent after taking flunitrazepam.31 All of the cases involved murder or attempted murder. One case involved armed robbery which was motivated by financial difficulties. In 2 of the cases, victims were stabbed in the eye which suggests intense rage. All but one of the cases involved substances other than flunitrazepam. Additionally, 2 perpetrators used cannabis and amphetamine, another 2 combined flunitrazepam with alcohol. And in 4 of the cases, the perpetrator was considered to be shy. Three of the cases reported described impulsive activity, 2 of the cases had depression listed as a diagnosis, and 1 perpetrator showed signs of paranoia. Limitations of the study include the small numbers, multiple confounding factors, and retrospective bias.

**Alcohol**

Ethanol and alcohol will be used interchangeably in this article. Ethanol is the most common social drug. Ethanol has a broad range of effects including impaired coordination, altered perceptions, sedation, and respiratory suppression. A case-crossover study by Haggard-Grann et al found a risk of 13.2 (95% confidence interval [CI]: 8.2-21.2) of increased violence after consuming alcohol.32 Alcohol may contribute to aggression in many ways and can increase sensation seeking and impulsive behaviors. Second alcohol may reduce fear via its mechanism on the GABAergic system. Fear often has an inhibitory affect on a person’s behavior9 and by minimizing an individual’s inhibitory response a person in a stressful situation may overreact to the event. Alternatively, if the inhibitory functions were still present and unimpaired, the individual might seek a diplomatic or constructive method of resolving the problem rather than a violent one. Alcohol also appears to decrease activity in the frontal lobe of the brain, which is needed for executive function such as planning and organizing. The decreased activity on the frontal lobe relates to increased impulsivity as described in the pathophysiology section.

**Phencyclidine**

PCP was used previously as an animal tranquilizer. PCP was studied as an anesthetic in humans. Initially, PCP initially showed clinical promise because of a lack of hypotension and low respiratory depression.33 Clinical studies were stopped after agitation, hallucinations, and disorientation were manifested as common reactions.34 The street name for PCP powder is “Angel Dust” and the liquid form has the street name “whack.”33 The most common route of administration is inhalation,33 although it was taken orally, intranasally, intravenously, and subcutaneously. PCP has numerous pharmacological actions including inhibition of the reuptake of dopamine, serotonin, and norepinephrine. PCP also increases production of norepinephrine and dopamine. Other mechanisms include blocking N-Methyl-D-aspartate (NMDA) in the hippocampus, neocortex, basal ganglia, and limbic system and has various effects on opioid receptors. The classic picture of PCP intoxication includes violence, nyctagmus, hypertension, and analgesia.33 Hypersalivation and hypertension are also common side effects of PCP.34 At higher doses seizures, hypertonic muscle activity, hyperthermia, and ataxia may occur.33

**Lyseric Acid Diethylamide**

LSD was first synthesized in 1938 and its mind-altering effects were discovered 5 years later. The effects of LSD include stimulation of affect, enhanced introspection, and numerous perceptual changes such as illusions and pseudohallucinations.9 In the 1960s, LSD became popular drug of abuse for tripping. The main target for LSD appears to be 5-HT2a but could also be 5-HT2c.35 LSD appears to inhibit serotonergic cell firing while sparing postsynaptic serotonergic receptors from upregulation/downregulation.35 Serotonin has multiple functions in the body but is mainly an inhibitory neurotransmitter. One of the functions of serotonin is to protect the mind from sensory overload. The vast majority of serotonergic neurons are located in the raphe nucleus. The raphe nucleus suppresses the locus ceruleus. The locus ceruleus is the main source of norepinephrine
Serotonin Reuptake Inhibitors

Medications that elevate serotonin have been implicated in several cases of violence. Breggin describes several cases of violence that resulted from SSRIs. The mechanisms that Breggin argues caused the violence can include an induction of mania, disinhibition, akathisia, or serotonin syndrome. Manic episodes with or without intoxication have been associated with criminal behavior. In contrast, Rossby argues that a serotonin deficit can lead to impulsive violence.

Insulin and Hypoglycemia

Variations in glycemic control and specifically hypoglycemia has been known to affect behavior and has been used as a defense in criminal cases from shoplifting to homicide. Evidence supporting such a claim can include behaviors that are uncharacteristic of the person. Additionally hypoglycemic-related events often have these common themes: no apparent motive of the crime, the presence of circumstances consistent with a hypoglycemic event (medication error, missing a meal, etc), a rapid and substantial change in behavior when given sucrose, glucose, or other sugar, and a true amnesia preceding, during, and after the crime.

Anabolic Steroids

Androgenic anabolic steroids include testosterone and its derivatives. The term anabolic steroids will be used. Anabolic steroids have both androgenic (masculinizing) and anabolic (muscle building) properties. Anabolic steroids are drugs that increase muscle mass, cause nitrogen retention, and increase lean body weight. Testosterone is the prototype for anabolic steroids. Medical uses include replacement therapy for individuals with low testosterone levels and treatment of the wasting syndrome associated with acquired immune deficiency syndrome. Additionally, anabolic steroids have been studied as a treatment for depression in men.

Toxic effects of anabolic steroids, specifically oral ingested products, include cardiovascular, hepatic, endocrine, and psychiatric. Cardiovascular side effects include a lowering of high-density lipoprotein (HDL) cholesterol, elevations of low-density lipoprotein (LDL) cholesterol, and impairing diastolic and systolic actions of the heart. Psychiatric adverse effects of anabolic steroid use include distractibility, delirium, psychosis, hypomania and mania, insomnia, hostility, and mood liability. Some studies and case reports suggest anabolic steroids may cause aggression, although the concise correlation between anabolic steroids and aggression is not well defined. Withdrawal reactions including hypogonadism and depression have occurred with anabolic steroid use. Addiction may occur with anabolic steroids.

Various case reports in the medical and lay press have suggested the correlation between anabolic steroids and aggression. For example, Horace Williams was charged with beating to death a hitchhiker in West Palm Beach Florida. Williams was using anabolic steroids purchased on the black market. Williams and William Whitmore, another defendant, tied a hitchhiker between 2 posts and beat him to death. The defense attorney argued that the anabolic steroids caused the violence leading to the murder. The jury did not agree and convicted Williams of murder. Whitmore did not use the "steroid
rage” as a defense. Planning was used in the murder so it may have made the insanity less plausible to the jury. The violence was predatory as opposed to impulsive violence. Williams also had a codefendant which is unusual in an insanity defense because most insanity defenses have one defendant.

Other Drugs

Many other drugs have been associated with aggression. Examples include cocaine by increasing dopamine and norepinephrine.9 Interferon has been reported to induce depressive symptoms and violence.25,43 Volatile substances such as toluene, other hydrocarbons, and aerosol propellants have been reported to cause criminally violent behavior.44 Cannabis use, although usually believed to cause a calming effect, has been associated with aggression. Lower doses of tetrahydrocannabinol can induce aggression but higher doses have a calming effect.9 Finally, a variety of drug withdrawal symptoms may lead to effects that present at agitation.20

The Insanity Defense

The terms insanity and mental illness are often confused and considered the same by laypersons. However, insanity is a legal term rather than a clinical term.45 A person can have a mental illness without being insane.46 The definition of insanity varies from state to state, but most states follow the McNaughten standard, which was developed in England in 1843.45 This standard indicates that a person would be found not guilty by reason of insanity, if at the commission of the crime, the person was afflicted with mental illness such that he or she did not know or understand the nature and quality of their actions. The Brawner case adopted the following language from the Model Penal Code of the American Law Institute which is “A person would be found not guilty by reason of insanity, if at the commission of the crime, the person lacked substantial capacity either to appreciate the criminality of the behavior or to conform his conduct to requirements of the law.” There were three elements in the above test: conative (emotional), cognitive, and volitional. This test was used in the case involving John W. Hinckley, Jr in the assassination attempt against President Ronald Reagan. Congress enacted the Omnibus Crime Code for Insanity in 1984.47 This added the language that the defendant must not “appreciate” the criminality of their act. This law also made insanity an affirmative defense in federal court.47 An affirmative defense shifts the burden of proof to the defendant. Intoxication from drugs has been used as a criminal defense with the above criteria.

Individuals using the phrase “the drug made me do it” as it relates to drug-induced intoxication as a defense is not new. In 1857, in a murder trial, the defense claimed that the defendant was insane because he overdosed on chloroform used in his surgery.48 This case was prosecuted by Abraham Lincoln and the lead defense attorney was Leonard Swett. The defendant, Isaac Wyant, was accused of shooting to death Anson Rush. Wyant and Rush were feuding over a land boundary for months. Eventually members of both families got into a fight in June 1855. Wyant who was injured needed to have his arm amputated after the fight. Chloroform was the anesthetic. On October 12, 1855, Wyant shot Rusk in the head and the shoulder leading to his death. Seven days later an indictment was handed down to Wyant. Attorney Swett put forth a claim of insanity. Numerous expert witnesses testified for the defense. Lay witnesses provided specific examples of odd behavior by Mr Wyant. Lincoln presented rebuttal expert witnesses and lay witnesses. The jury acquitted the defendant.48 Three years later Abraham Lincoln was elected as President of the United States. Having a co-perpetrator demonstrates organized behavior, which indicates predatory aggression instead of impulsive aggression.

In a review article Spiegel and Siskin suggest that Lincoln may have not been aware of the medical literature related to the effects of chloroform.48 Much of the literature at the time suggested chloroform was considered safe, especially when compared to ether. Additionally, Wyant had a well-known track record of hostility against Rusk. Planning was clearly used in the murder of Rusk. Today this would likely be used in an attempt to rebut the insanity claim. Modern pharmacokinetics did not exist at the time. The half-life of chloroform (by inhalation) is 8 hours.49 Chloroform was obviously eliminated from the body between June and October of the same year which would have been used to rebut the insanity claim. Perhaps today though, one might need to demonstrate that the chloroform was needed to cause permanent brain damage.

Senay and Wettstein reported 24 cases of homicides committed by individuals who had previously ingested psychoactive drugs.50 They found the following characteristics of the homicide: (1) no plan or a poorly thought out plan; (2) no plan for escape; (3) a frequent confession to the crime; and (4) showing of remorse.50 Utilizing drug-induced insanity is less likely to be a successful defense if the intoxication was voluntary versus a prescribed drug or nonprescription medication. In fact, many jurisdictions will not allow an insanity defense in a voluntary intoxication. An exception may occur if the defendant had a mental illness which contributed to the effects of the substance.51 In addition, the mental illness must also be able to independently account for the insanity defense.51 A number of jurisdictions allow for a “settled insanity” which is when voluntary intoxication occurs on a long-term basis which causes insanity that is independent from the acute intoxication of the drug.51 A defense of insanity in general, regardless if in a drug is claimed to be the causative factor, is less likely to be effective if the defendant shows that he or she was organized, had a motive, or tried to cover up the crime.

We will discuss 2 cases where the insanity defense was claimed, of which both received national attention in the media. In one case, the jury did not accept the insanity defense. In the other case, the defense of insanity was accepted. Neither case involves intoxication as the cause of insanity. However, both demonstrate the issues involved with the insanity defense. The first case relates to the actions of John Wayne Gacy. He was charged with killing 33 young men and boys in the
1970s. Most of the victims were sexually tortured. The vast majority of the bodies were buried in the crawl space below his house or elsewhere on his property. Four victims were dumped in the Des Plaines River. John Wayne Gacy’s lawyers claimed the insanity defense. Some of the victims were employees of Gacy. Other victims were picked up on the street. Gacy had a fake badge and put spotlights on his sedan to make appear as if it were an unmarked police cruiser. Again, the claimed insanity was NOT attributed to drug use. However, this case demonstrates several important factors in an insanity defense. Gacy was organized in both conducting the murders and burying the victims. He was found guilty by the jury. In fact, the jury deliberated less than 2 hours. The jury probably did not accept the insanity defense argument for several reasons. Planning was done by Gacy in the killing and covering up of the crimes. Gacy had motive for the murders, that is sexual gratification. The extensive publicity and national outrage may have made it less likely for the jury to acquit. After several appeals, he was executed by lethal injection on May 10, 1994. Terry Sullivan, one of the prosecutors, emphasized during the closing arguments that just because one is abnormal, that does not automatically mean that the defendant is insane.

In 2001, Andrea Yates murdered her 5 children by drowning. She reported the incident immediately to police. Andrea Yates was found not guilty by reason of insanity in 2006. Ms Yates also had a documented history of mental illness and suicide attempts. Several differences exist between the Gacy and the Yates cases that deserve mention. Gacy attempted to cover up the crime while Yates did not try to cover up the incident. In fact, she reported the incident immediately to the police. Yates did not have a motive (eg, financial motive) for murdering her children, while Gacy had a motive for killing his victims, that is sexual gratification. Gacy did not have a documented history of a major mental illness while Yates did. And finally, Gacy’s conduct indicated premeditated aggression whereas Yates behavior was impulsive aggression.

The insanity defense requires that the person did not know or comprehend that what they did was not within the confines of the law. A defendant found not guilty by insanity is legally excused from his or her acts. A plea based upon insanity usually is not sought in minor crimes. The reason is that a finding of not guilty by reason of insanity usually results in a commitment to a psychiatric hospital. The commitment is considered for the safety of the public and the patient and is not considered punishment. Therefore, it can fairly easily be renewed by the treatment team through the court. The time spent in a locked psychiatric facility may be much longer than one would serve in jail. Therefore, most attorneys will not seek an insanity defense for a minor crime. Another consideration for the insanity defense is general intent versus specific intent. The legal basis for this is discussed in the article by Yoshizuka and Perry, which is another article in this issue of Journal of Pharmacy Practice.

Diminished Capacity

Drug-induced insanity is not commonly used as a criminal defense. A more common situation is an argument that a drug resulted in diminished capacity. Many differences exist between diminished capacity and insanity. A finding of insanity in most states will result in acquittal of the defendant although almost always this results in commitment to a mental institution. A finding of diminished capacity results in the defendant being found guilty and convicted of a lesser charge. For example, a defendant may be convicted of manslaughter rather than murder. The argument being that the defendant lacked the mental capacity to intend to murder but may have acted recklessly, resulting in the death.

Civil Litigation

Forensic issues relating to drug-induced violence is in no way limited to criminal defense. It may also result in civil litigation against pharmaceutical manufacturers. For example, on May 17, 2009, Sean Wain shot his wife Natalie Wain. Mr Wain then aimed the shotgun in his own mouth and fired. The Beaver County Coroner ruled the deaths a murder/suicide. A product liability suit was filed against Pfizer claiming that varenicline (Chantix) caused the violence.

Role of the Pharmacist

Pharmacists can educate the general public, law enforcement officials, lawyers, and other health professionals about the dangers of violence from drugs of abuse and from legitimately prescribed drugs. It is important to be aware of the limitations of the literature in concluding whether or not a given drug may cause aggression. Pharmacists may review adverse drug reaction reports involving aggression in either the clinical or medicolegal setting. The forensic pharmacist might be skeptical but must remain open-minded when reviewing a case claiming drug-induced violence. Pharmacists may also serve as expert witnesses in criminal or civil trials where impairment due to drug use is an issue. The forensic pharmacist may serve as an expert for either the defense or the prosecution.

Conclusion

Violence is an unfortunate occurrence in society. Drugs can sometimes cause or contribute to violence, especially impulsive or affective violence. Drugs interfere with numerous pathways in the body which can alter behavior. Sometimes this behavior is aggression. Pharmacists can serve the criminal justice system by explaining the clinical and scientific issues relating to drug-induced violence.

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