Substance Related and Addictive Disorders

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20.1 Introduction

Substance abuse is a major problem in consultation liaison psychiatry, disproportionate to the degree of substance abuse in the community. Twenty to thirty percent of consultations in a general hospital have been reported to involve a substance abuse diagnosis, and this has been consistent over time (Bourgeois et al. 2005; Alaja et al. 1998).

A number of medical complications, direct and indirect, occur due to the use of substances of abuse, and result in medical admissions. Motor vehicle accidents, falls, and other kinds of trauma are so frequently associated with substance use that trauma services routinely do urine toxicology to screen new admissions for drugs and alcohol (Silver & Sporty 1990).

The consultation-liaison psychiatrist is typically called upon to diagnose and treat patients for the substance abuse problems that are present. Motivating the patient for treatment and/or making some kind of long-term treatment plan is often the main reason for the consult. In addition, there may be an acute problem associated with intoxication or withdrawal that needs to be assessed and managed. These issues are discussed with a focus on the practical issues facing the consultation-liaison psychiatrist (Haber et al. 2009).

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20.2 Alcohol

The consultation liaison psychiatrist will frequently be called to assist in the care of patients with alcohol use disorder.

20.2.1 Diagnosis

DSM-5 lists 11 criteria, 2 of which are required to diagnose alcohol use disorder. These criteria include tolerance, withdrawal, loss of control of use, craving, and various adverse effects on activities and functioning. The patient can be considered in early remission if no criteria are met for at least 3 months, and in sustained remission if no criteria are met for at least 12 months. A separate diagnosis, alcohol intoxication, is diagnosable if alcohol causes clinically significant behavioral or psychological problems and one of the following: slurred speech, incoordination, unsteady gait, nystagmus, impairment in attention or memory, and stupor or coma. Most of these signs aren't readily elicited when the patient is examined in the emergency room or in a hospital bed. For the consultation-liaison psychiatrist, the importance of diagnosing alcohol intoxication is to avoid too early treatment of alcohol withdrawal, possibly exacerbating the intoxicated state.

Alcohol withdrawal is a separate disorder caused by the reduction in or cessation of heavy, prolonged alcohol use. Two or more of certain signs or symptoms are required to make the diagnosis. These include autonomic hyperactivity such as diaphoresis or rapid pulse, hand tremor, insomnia, nausea or vomiting, transient sensory illusions or hallucinations, agitation, anxiety, and generalized seizures.

The diagnosis of alcohol withdrawal delirium is specified in a separate section of DSM 5. It requires a disturbance in attention and cognition, such as disorientation and fluctuating states of awareness, all of which are due to alcohol withdrawal.

The most common reason for psychiatric consultation with the alcoholic patient has to do with the prevention or treatment of alcohol withdrawal. Alcohol withdrawal delirium, or delirium tremens, can be life threatening, and it is important to treat this condition vigorously if this diagnosis is suspected. Referring physicians may be confident that alcohol withdrawal delirium is present, or they may be unsure or unaware of it and think that a functional psychosis is present instead. In addition to a history of alcohol dependence and a mental status consistent with delirium, physical signs are usually present and help clarify the diagnosis. These include tremor, increased deep tendon reflexes, and often ankle clonus, all signs easily checked at the bedside during the consultation. Vital signs will usually indicate autonomic instability, but these are nonspecific and cannot be relied upon alone. The likelihood of alcohol withdrawal producing symptoms is related to a number of factors, including the duration of drinking, the amount of alcohol consumed on average per day, and the age and weight of the patient. It is common for the patient to underestimate the amount of alcohol imbibed. On rare occasions the patient may overestimate the amount, particularly if the patient knows this may lead to more vigorous drug treatment. Collateral information can be extremely helpful in determining the extent of alcohol dependence.

20.2.2 Treatment of Alcohol Withdrawal

Case vignette: *A 220-lb*, *55-year-old man with a history of alcohol abuse developed delirium 2 days after being hospitalized for a medical problem. The psychiatric consultant*, *suspecting alcohol withdrawal*, *recommended diazepam*, *20 mg orally every 2 h unless asleep. Within 3 days he had fully recovered and the dose was rapidly tapered. When the patient was confronted with the fact that his delirium had been due to alcohol withdrawal*, *he insisted that he never drank more than three or four beers per day. His wife*, *however*, *pointed out that he drank a case of beer or more every night*.

There are a number of methods for managing alcohol withdrawal. The benzodiazepines are the treatment of choice due to effectiveness and the

lack of toxicity. The general principle is to give benzodiazepines in sufficient doses to ameliorate the delirium. This usually means that the patient will go to sleep, after which the delirium often breaks (Kotorii et al. 1982).

Structured protocols have been recommended for determining the dose of the benzodiazepines. A common one is called CIWA (Clinical Institute Withdrawal Assessment). In this protocol the dose of benzodiazepines is determined by rating various signs and symptoms consistent with alcohol withdrawal. Studies have shown that in a population of alcohol abusers in which no one goes into alcohol withdrawal delirium, less benzodiazepines are likely to be used than another method involving giving a fixed dose. No studies have been reported of CIWA's effectiveness for patients already in actual alcohol withdrawal delirium. Thus, it is possible that this protocol may not be reliably effective enough for the population of alcoholics that are actually going to go into withdrawal. Practically, this protocol may be of little value on a medical floor where the nurses are not familiar or experienced in its use (Bostwick and Lapid 2004). They are unlikely to keep track of the relatively complicated ratings necessary to determine the benzodiazepine dose. If this protocol is ordered on a medical floor, the patient will commonly get very little in the way of benzodiazepines, irrespective of the clinical condition (Stanley et al. 2005).

A similar, but even more complicated protocol has been tested in surgical patients. This protocol was triggered using lorazepam with the development of any alcohol withdrawal symptom, but almost half of these patients went on to develop delirium anyway. It is not known if the protocol reduced the number of patients who would have developed delirium or not, but the author's observation that short-acting benzodiazepines can trigger alcohol withdrawal symptoms is consistent with this study. In any event, such a protocol would require extensive training of nurses, however, and practicalities would make it difficult to use (Neyman et al. 2005).

A much simpler technique that can be easily managed on the medical ward is to give a long-acting benzodiazepine on a fixed schedule, and monitor frequently to see if the dose needs to be adjusted. If the patient is found to be in withdrawal delirium, **20 mg of diazepam every 2 h can be given and the dose held if the patient is asleep**. If there is no improvement after two or three doses, the dose needs to be raised accordingly. By holding the dose if the patient sleeps, excessive and prolonged sedation will be avoided. This is an easy protocol for the nurses to follow, and they will not experience difficulties with it.

There is some controversy about which benzodiazepines are superior, with the argument based on whether the short acting lorazepam is superior because it is not solely metabolized by the liver (as it is also secreted in urine), or whether long-acting benzodiazepines are superior because they do not wear off rapidly and will not enhance the precipitation of withdrawal symptoms every few hours. The literature consists mostly of opinion. I could find no reports of problems associated with long-acting benzodiazepines in patients with liver disease. If one does not continue to dose when the patient is sleeping, the patient is not likely to be overdosed due to inability to metabolize the drug. On the other hand, there are reports where the delirium is exacerbated by the use of intermittent short-term benzodiazepines, not uncommon in this author's experience. When the benzodiazepine wears off it seems to stimulate the withdrawal, just as giving alcohol, and then letting it rapidly wear off, might be expected to do. If the short acting benzodiazepines are given frequently, however, such as by continuous intravenous drip, then this should not be a problem.

Once the delirium breaks, and the patient is able to sleep soundly, the benzodiazepine can be tapered very rapidly. If the patient is mentally clear, tapering the benzodiazepine over 2–3 days should cause no problems.

To prevent or treat Wernicke's encephalopathy, thiamine 500 mg IV should be given three times a day for 3–5 days (Parker et al. 2008; Patient.co.uk 2014). Such patients should continue thiamine 100 mg per day.

Some alcohol dependent patients who have had numerous episodes of delirium tremens and have been alcoholics for a long time may not

completely clear from their episode of withdrawal delirium. They may have a residual dementia (Korsakoff's psychosis). If alcohol is not reintroduced they may slowly improve over a period of months. When the mental status changes seem to have stabilized, benzodiazepines are probably no longer useful and they can increase the probability of cognitive disturbance.

20.3 Opioids

Consultations involving issues associated with prescription pain medications are discussed in Chap. 22. In this section, the focus is on patients using illicit opioids.

Not infrequently, heroin addicts are hospitalized for medical conditions, and psychiatric consultation is requested. Referring physicians are often quite uncomfortable with these patients, not understanding their lifestyle, and communication is difficult. The psychiatric consultant should attempt to begin treatment for their narcotic dependence to the extent possible while they are in the hospital. Indeed, such patients are a captive audience while receiving medical treatment; sobriety is maintained with its benefits on cognition. A relationship can be developed and they will not run away. A psychotherapeutic intervention, be it support, confrontation, or motivational enhancement (Baer et al. 1999) has a better chance to take hold.

The opioid addict should not be forced to endure withdrawal as a punishment for drug abuse. There is no evidence that this leads to a better outcome. Detoxification should occur as comfortably as possible in the hospital while the patient is being treated for a medical condition. Ideally, the consultant knows how long the patient will be in the hospital, and this determines the speed of detoxification, especially when outpatient follow-up compliance cannot be assured, as is usually the case.

Case example: *A 33-year-old man was admitted for cellulitis of the leg. He was heroin dependent, and when seen the day after admission, he complained that he was "jonesing" (a slang term for being in withdrawal). He was postured in a curled up position, and had piloerection and dilated pupils. He had not slept the previous night. Administration of 20 mg methadone made him comfortable after an hour. He stabilized on 15 mg twice per day, was eating well, sleeping satisfactorily, and pupils were about 3 mm in diameter. He complained that he still felt as if he were in withdrawal and thought 45–50 mg of methadone per day would do the trick. Instead, he was told that discharge was anticipated in a week, and he would be detoxified and encouraged to go to a drug treatment program. He insisted that he be maintained on methadone, and that the dose should be raised, because he would follow up with a methadone program where they were expecting him and would maintain him on 95 mg per day. He was told that if the program were indeed going to maintain him, this could be done in the hospital, but it would have to be coordinated with the methadone program. He reluctantly gave permission to contact them since this was the only possibility he could get his desired dosing schedule, and this was done, but the story turned out differently. The patient was indeed known to the methadone treatment program, but he had never followed through to enter treatment or even be detoxified. The program would need to carefully evaluate him before considering accepting him as a client—they would not automatically accept him for maintenance on 95 mg, or any dose.*

The patient was counseled on what to do to get in the program. He was told that for the remaining time in the hospital he would be given a liquid solution of methadone to regulate the dose better, and it was advisable that he not be told the dose. He balked at this. He was then told that if he insisted on knowing the dose, it would automatically be lowered each time because his complaints might reflect anxiety, but if he did not know the dose, his complaints would be evaluated carefully with every attempt being made to keep him comfortable. He agreed to not be told his dose. He was given a 30 cc liquid solution of juice and varying doses of methadone. He was started at 9 mg three times per day, with a reduction of 2 mg per dose the next day, and 1 mg per

dose each day after that. At discharge, he was given a solution of 1 mg per 30 ml, and told to take 1 tablespoon (15 ml) every 12 h until none was left. He was given 90 ml. Even if he took it all at once, it would not hurt him, being too small a dose to resume a physical dependence. In any event, he would have had a week of psychotherapy to motivate him to enter a treatment program, and he would have a greater opportunity for such, being free of an opioid habit.

Heroin addicts may or may not try to hide their addiction when they are seen in the general medical hospital often for trauma. It is not uncommon that they will try to smuggle in a supply of heroin with them to use while they're being treated.

Case example: A 32-year-old man was admitted to the hospital with a broken mandible. Three days after admission he demanded to see a psychiatrist. He stated that he had brought a supply of heroin with that, but had not anticipated that his hospitalization would be longer than 2 days, so he had run out. He believed he was experiencing opioid withdrawal and desperately wanted help. Although 20 mg of methadone can often be expected to alleviate heroin withdrawal, this patient claimed that his supply was very good stuff, and indeed, after 30 mg of methadone he was still very uncomfortable and had dilated pupils. The next day he was given 40 mg and his pupils went down to 3 mm, at which time he felt comfortable. The dose was then reduced steadily each day while he was in the hospital. He revealed his multiple social problems to the psychiatric consultant during follow-up visits. After a few days, he acknowledged that heroin was at the center of his problems, and he agreed to placement in a residential treatment program.

In some hospitals, the use of methadone for detoxification is discouraged. This is unfortunate since there is no restriction on the use of methadone for detoxification from opioid dependence in the hospital when the patient is admitted for treatment a medical condition. Clonidine is sometimes recommended as an alternative. The use of this drug can be appealing, since it is not a narcotic, and it does suppress some withdrawal symptoms. It is only partially effective in this regard, however, and large doses are often needed, which can interfere with the concurrent medical treatment. Furthermore, the patient is likely to remain much more uncomfortable in contrast to methadone, and clonidine itself will have to be tapered (Ling et al. 2005).

Reports of the utility of buprenorphine in the hospital setting are increasing. Evidence is accumulating that buprenorphine has advantages over methadone in the treatment of some opioid addicts (Gowing et al. 2009). For heroin addiction, sublingual dosing of 4–24 mg over 24 h will likely eliminate withdrawal symptoms. The dose can then be rapidly tapered over a few days, or even stopped after 1 day, and the patient is likely to remain physically comfortable, with minimal to no withdrawal symptoms. Follow-up drug treatment after discharge from the hospital is critical, however, or else the relapse rate is extremely high.

Buprenorphine is a major therapeutic advance in the treatment of opioid use disorders. It is a partial agonist at the mu opioid receptor. Clinically, this means there is a ceiling effect and raising the dose beyond a certain point has essentially no effect. Thus, respiratory depression rarely occurs even in overdose situations, unless the individual has no tolerance to opioids or mixes buprenorphine with other drugs or alcohol. In the treatment of opioid withdrawal, one or two doses is usually all that is needed to eliminate withdrawal symptoms and restore the patient to reasonable comfort. Caution is warranted, however, to make sure the patient is actually in opioid withdrawal. Dilated pupils, clammy skin, piloerection, insomnia, poor appetite, and body aches are clinical signs of withdrawal that predict a good immediate response to buprenorphine.

If the patient has high doses of opioids in his/her system, then buprenorphine can precipitate withdrawal symptoms. This is because buprenorphine affiliates to the mu opioid receptor more strongly than most other opioids, and will replace them on the receptor. Being only a partial agonist, however, it may not stimulate the receptor enough to prevent the withdrawal symptoms caused by loss of the other opioid. This is particularly a

problem if the patient had been taking methadone at doses of more than 20–30 mg daily for extended periods of time. In that case, methadone must be tapered to a dose less than 30 mg, the amount depending on how long they had been taking methadone daily. To continue treatment with buprenorphine in outpatient follow-up, the prescriber must have an additional waiver on his/her narcotics license to prescribe buprenorphine for opioid use disorders.

20.4 Stimulants: Amphetamines and Cocaine

The stimulant drugs amphetamine, methamphetamine, and cocaine have much in common, with the primary clinical difference being duration of action with cocaine wearing off much more rapidly. Amphetamine pills were a common source of substance abuse problems in the 1960s and 1970s. A smokable form of methamphetamine became widely abused in the 1980s in Hawaii (Jackson 1989), and it has since spread throughout the country. Stimulant abuse with methamphetamine is now common although cocaine remains most popular in the Eastern part of the USA and is also widely prevalent in the rest of the country. Stimulants are the cause of many hospital admissions, and consultation-liaison psychiatrists frequently are consulted (Baberg et al. 1996). Cardiac complications are often present in otherwise young, healthy-appearing individuals (Hawley et al. 2013)

Some of these patients are in amphetamine or cocaine withdrawal, sleeping most of the time and quite hungry. They may appear severely depressed when awake. If the depression does not clear in 2 or 3 days, it may need specific treatment. These patients are usually not management problems, but will have varying degrees of denial about their problem. When they are confined to the hospital because of their medical problem, there is an opportunity to confront their denial and strongly recommend treatment and a change in their lifestyle. Ideally, there is a significant other that is supportive in the hospital and encourages the person.

Sometimes the patient is belligerent, even psychotic, with a positive drug screen for amphetamines and/or cocaine, and the question becomes, does the patient have an intrinsic psychosis, such as schizophrenia, or is it a stimulant-induced psychosis (especially with amphetamine because of the long duration of action)? If an amphetamine or cocaine psychosis is present, standard antipsychotic medication, often in low doses, quickly reverses the psychosis, and then the issue is arranging follow-up treatment. Sometimes the family will want to attribute a first psychotic break from a functional disorder as being solely due to drugs, because of the potentially better prognosis.

Many communities will not have specific stimulant oriented drug treatment programs available. Referral, then, must be to a more generic substance abuse program. A residential program should be considered. Patients are unlikely to seek such a program unless they are motivated sufficiently by their deteriorating social and occupational functioning, or if they need a good record to combat legal troubles. It the patient remains depressed and is suicidal, inpatient psychiatric admission may be required. For the higher-functioning patient, referral for outpatient psychotherapy may be more appropriate, and for the patient unmotivated for a residential program, it may be more realistic.

20.5 Benzodiazepines and Sedative-Hypnotics

Benzodiazepine dependence and abuse are common problems complicating medical cases seen by the consultation-liaison psychiatrist. When used beyond the short-term, the risks are likely to exceed the benefits (Johnson and Streltzer 2013). Commonly, they are not the only drug of abuse. In a series of somatoform pain disorder cases, a majority of prescription opioid-dependent patients were also benzodiazepine dependent (Streltzer et al. 2000). Benzodiazepines are widely sought after by street addicts and used in combination with stimulants and opioids (Ibañez et al. 2013) Short acting benzodiazepines, such

as alprazolam, are usually preferred because of their rapid-acting effects, but diazepam and clonazepam, which have long durations of action, are also problematic since the dependency that develops with long-term use is difficult to overcome.

Intoxication with these drugs causes sedation and sometimes disinhibition. Signs of intoxication include ataxia, nystagmus, loquaciousness, and dysarthria. Consultations are usual after overdoses, but somnolence and the intoxicating effects of these drugs need to wear off before a reliable history can be obtained and a satisfactory evaluation can be done.

Withdrawal symptoms are similar to alcohol, but they occur less commonly and are milder. In cases of long-term dependence on high doses, withdrawal seizures and delirium can occur. Usually, however, withdrawal is manifested by insomnia and irritability, and intense craving can occur. Withdrawal may be seen as frequently or more so in patients not suspected of being substance abusers, but who have been prescribed benzodiazepines on a chronic basis. The elderly are particularly susceptible even with relatively low dose prescriptions (Moss and Lanctot 1998). When a patient becomes agitated several days after being in the hospital with no apparent behavioral problems, benzodiazepine withdrawal should be considered. Withdrawal from long-acting benzodiazepines can occur 5–10 days after cessation of the drug.

Treatment of benzodiazepine withdrawal is similar to that of most drugs of abuse, specifically, substitution of a cross-tolerant long-acting drug, and tapering the dose over time. It is most effective and safest to use another benzodiazepine for this purpose. Anticonvulsants have been advocated also, but it is not clear how effective they would be in cases of severe withdrawal. The most difficult situation to manage occurs when the patient has been dependent on high-dose long-acting benzodiazepines for a long time, for example, diazepam 80 mg daily or clonazepam 8 mg daily for several years. For safety and to avoid discomfort, a *very gradual tapering schedule* should be used, over perhaps 4–6 months, with larger dose decreases prescribed in the beginning, and smaller dose decreases at the end. Since an inpatient is likely to be discharged in days, or occasionally weeks, careful outpatient follow-up and coordination must be planned.

A common clinical problem during an acute admission is that the referring physician does not want the patient to cause any difficulties, and is willing to prescribe whatever is needed to keep the patient quiet until discharge, leaving the problem unattended to. The consultation-liaison psychiatrist is advised to persist attempting to keep the patient's long-term needs foremost, because the inpatient setting provides a prime opportunity to intervene in the pathological process.

Although it should not make any difference physiologically, the author has found it often psychologically helpful to switch to a different long-acting benzodiazepine during the detoxification process. For example, if a patient were dependent on diazepam, switching to an equivalent dose of chlordiazepoxide (less 20–25 % to begin detoxification) provides the psychological advantage that the patient is immediately free from the drug that he or she had been unable to reduce. Contextual associations have not developed with the new drug, and, thus, compliance with further reductions is more likely.

Case vignette: *A 32-year-old, single woman was hospitalized for an infection requiring intravenous antibiotics. She was quite demanding, prompting a psychiatric consultation request. The consultant discovered that she had been a psychiatric patient most of her adult life and had made several suicide gestures. She carried diagnoses of borderline personality disorder, bipolar disorder, and polysubstance abuse. She acknowledged using clonazepam, her preferred medication, for years in varying amounts. She averaged about 8 mg per day over the past year.*

Assessing that this dependency was instrumental in causing her erratic behaviors and functional deterioration, she was told that clonazepam would not be prescribed in the hospital, but she would receive alternative medication that would prevent any withdrawal symptoms. She was anxious about this, but limits were set, and she was prescribed chlordiazepoxide, 50 mg, four times per day. The consultant visited her frequently for

support and encouragement. She became quite pleased with herself that she was free of the clonazepam, and became a compliant patient during the rest of the hospitalization. She followed up with the consultant psychiatrist after discharge. Her chlordiazepoxide dose was systematically lowered every 2–4 weeks, and in 6 months, she was free of benzodiazepines. For the next 3 years, she attended monthly group therapy sessions, remaining clean of all substances of abuse. She was employed, and borderline behaviors had ceased.

In this case, the use of chlordiazepoxide had the advantage of being a higher milligram dose than her clonazepam, reinforcing in her mind that she was being adequately medicated. In addition, instantly stopping the drug she had been dependent on for so long, and yet remaining comfortable, was a huge psychological boost. This made the detoxification process go much more smoothly, even though detoxification using clonazepam would have been physiologically the same.

Abuse of non-benzodiazepine sedative-hypnotics is rare, fortunately, compared to 40 years ago. Two abusable sedative drugs that are still problems, however, are butalbital, a barbiturate, and carisoprodol. Butalbital is present in older combination products, such as Fiorinal, Fioricet, and Esgic, that are sometimes prescribed for headaches. Barbiturates can be lethal in overdose, and they are highly addicting. Withdrawal can be dangerous, causing seizures, delirium, and death. Carisoprodol, known as Soma, is sometimes prescribed as a muscle relaxant. It is metabolized to meprobamate, an old barbiturate-like sedative popular in the 1950s. It has become a sought after street drug of abuse (Reeves et al. 1999). It is most often taken by chronic pain patients who are dependent on opioids.

Another drug that is not often recognized as a sedative-hypnotic but can produce similar dependency and withdrawal symptoms is baclofen (Leo and Baer 2005; Rolland et al. 2014). This drug is indicated for spasticity associated with multiple sclerosis, but it is being used more often for nonspecific chronic pain. It is probably used chronically mostly by pain patients prone to dependency.

If an inpatient has a known history of taking at least 3–4 doses of a sedative-hypnotic daily for more than a couple months, the potential for serious withdrawal symptoms (similar to alcohol withdrawal) must be anticipated. Substitution of barbiturates and/or sedative hypnotics with phenobarbital, and then tapering the dose, works well for detoxification. Whether detoxification is required depends on the dose times the duration that it was taken. Detoxification is likely to be needed if the patient were taking three or more doses daily for a substantial period of time. Fifteen milligram of phenobarbital, three times per day, should comfortably cover four to five doses of carisoprodol, baclofen, or butalbital in any combination per day. Tapering should be slow because withdrawal is dangerous. Two to three weeks is safe for the lowest doses, and dependence on higher doses should take longer. Attempting to detoxify by simply gradually reducing the dose of the offending drug is typically quite uncomfortable (because of the short duration of action) and the patient will resist.

An advantage of phenobarbital is that it can cover dependencies on multiple substances, including barbiturates, benzodiazepines, alcohol, and sedative-hypnotics. A co-occurring opioid dependence requires the addition of an opioid for detoxification, however.

Case vignette: *A 52 year-old woman was admitted to the medical floor after passing out at home, bruising her head. Urine drug screen on admission was positive for barbiturates, benzodiazepines, and opioids. She complained of headaches and chronic back pain. She was vague about her prescribed medications and her outpatient treating physicians. She denied daily medication use, or ever taking more than four pain pills per day, but her husband reported that he had seen her take "ten at a time." On admission exam, she did not have dilated pupils or piloerection that might be present in opioid withdrawal. She had a mild tremor of the outstretched hands, and a positive glabella reflex, which is often present in barbiturate withdrawal. She appeared anxious, asking for medications, and eager to be discharged from the hospital. She was placed on 15 mg of*

phenobarbital twice per day, *which made her comfortable. Medical workup was negative. She was tapered off the phenobarbital over a few days and referred to the pain clinic psychiatrist for follow-up*.

20.6 "Club drugs,""Bath Salts," and Others

Other substances of abuse, including the so-called club drugs, are occasionally an issue in medical patients, leading to hospitalization. Club drugs are so-called because they tend to be used in dance clubs and at "rave" parties. The psychiatric consultant may be called to see patients admitted on medical services for altered mental status. Patients without a history of prior psychosis who appear bizarre and psychotic may be experiencing of reaction to one of several kinds of drugs commonly referred to under the rubric of "club drugs."

Some of these have been around for well over a decade. These include ecstasy, gamma hydroxybutyrate (GHB), and ketamine (Freese et al. 2002). Ecstasy (MDMA—3,4-methylenedioxymethamphetamine) has been around for half a century and is illegal. It is an amphetamine like drug purported to increase empathy, physical energy, and self-confidence. It can cause derealization, impaired decision-making, jaw clenching, headaches, gait disturbance, increased blood pressure and pulse, and sweating. It is thought to increase serotonin release and inhibit its reuptake. Deaths have occurred, often in association with hyperthermia (Freese et al. 2002).

GHB is available by prescription for certain conditions (narcolepsy). It is easily made, however, and is sold illegally under various names. Its effects are somewhat similar to alcohol, but episodes of unconsciousness are more frequent and unpredictable. They tend to occur in young males who are simultaneously using alcohol and other drugs. Dependent users who abruptly stop experience withdrawal similar to alcohol. Treatment with benzodiazepines has been recommended (Miró et al. 2002).

Ketamine is a phencyclidine (PCP) derivative originally developed as a human anesthetic agent. Recently it has been proposed as a rapid treatment for intractable depression (Browne and Lucki 2013). It is an NMDA antagonist. It can produce cognitive disturbances and symptoms resembling schizophrenia. It is relatively safe in overdose.

Newer club drugs include synthetic cathinones, piperazine derivatives, kratom, methoxetamine, synthetic cannabinoids, and salvinorin A. (Davis 2012).

Synthetic cathinones, such as mephedrone, are commonly referred to as "bath salts," and are sold under various names such as Ivory Wave and White Dove. These were first identified as drugs of abuse in the USA in 2008. They stimulate the release of dopamine, norepinephrine, and serotonin, as well as inhibit their reuptake. They are used for feelings of euphoria and increased energy but can have severe adverse stimulant effects including tachycardia, hypertension, hyperthermia, arrhythmias, severe agitation, psychosis, and self-mutilation.

Repeated use may cause persistent visual hallucinations and paranoia. The presentation be include extreme agitation (Winstock 2012; Imam et al. 2013; Gunderson et al. 2013). ECT has been reported to effectively treat persistent psychosis unresponsive to antipsychotics (Penders et al. 2013).

Piperazine derivatives (bezylpiperazine—BZP) also are marketed under a variety of names, such as Cosmic Jet and Exotic Super Strong. They also produce stimulant effects and can cause palpitations, anxiety, and nausea and vomiting (Arbo et al. 2012).

Synthetic cannabinoids, often termed "Spice" or "Fake Weed," are sprayed on any variety of plant matter and smoked. They can be much more dangerous than marijuana causing severe anxiety, hyperemesis, psychosis mimicking schizophrenia, acute kidney injury, and a withdrawal syndrome (Penders 2012; Van der Veer and Friday 2011; Nacca et al. 2013).

Kratom (mitragynine) is a potent mu opioid receptor agonist and produces dose-related

opioid effects (Hassan et al. 2013). Methoxetamine (Kmax, MXE, legal ketamine) is an NMDA receptor antagonist and can cause anxiety and paranoia. It is a derivative of ketamine promoted as legal and bladder-friendly. However, it appears to have more adverse effects than ketamine ranging from mood disturbances to acute cerebellar toxicity (Corazza et al. 2013).

Salvinorin A comes from *Salvia divinorum*, a mint herb, and goes by such names as "Magic Mint" and "Salvia Zone." It is taken for its hallucinogenic effects. It is a kappa opioid receptor agonist and can lead to persistent psychosis (Roth et al. 2002).

Often the specific drug taken is not identified, and even if it is, treatment is nonspecific and symptomatic, usually including antipsychotics or benzodiazepines (Bialer 2002).

20.7 Nicotine

The consultation liaison psychiatrist is rarely requested to see a patient because of nicotine dependence. Nevertheless, the consultant has the opportunity to make an impact on smoking in patients that are being seen primarily for other problems.

Smoking is much less prevalent than it was in years past. It is still considered, however, the leading preventable cause of morbidity and mortality in the USA and much of the world. Among substance abuse patients, it is a common comorbidity. Smoking cessation is not associated with adverse effects on mental health. To the contrary, a recent study demonstrated mental health benefits. Indeed, depression was improved as much as with antidepressant medication (Taylor et al. 2014).

There are a number of different aids for smoking cessation, most of which involve nicotine replacement. These include gum, patches, lozenges, nasal spray, and electronic cigarettes. All of these increase quit rates 50–75 % (Stead et al. 2012).

Antidepressant drugs have also increased quit rates, at about the same frequency as nicotine replacement therapies. The most studied antidepressants for smoking cessation have been bupropion and nortriptyline, with no differences shown among any antidepressant studied (Mahvan et al. 2011).

Varenicline is a medication that is a partial agonist at a subtype of nicotinic acetylcholine receptors (Faessel et al. 2010). It is at least as effective as other aids, and may be more effective. Early reports that it may cause depression and suicidality have not been born out (Cinciripini and Karam-Hage 2014).

Electronic cigarettes have become very popular alternatives to tobacco cigarettes, and users claim that they help them to quit smoking. E-cigarettes are battery powered devices that vaporize nicotine solutions for inhalation. The nicotine dose can be controlled, and tobacco tars are not present. Toxins have been found in the vapor, but to a much lesser degree than tobacco smoke (Goniewicz et al. 2013). Studies show that quit rates using e-cigarettes seem to be as good as or better than other smoking cessation aids (Bullen et al. 2013).

Patients seen in the general hospital are often ill and may not feel like smoking, or be much less interested in smoking during that period of time. Motivation to quit smoking may be enhanced and it is worthwhile for the consultation psychiatrist to encourage this. Simple advice from a physician may double the quit rate (Stead et al. 2013). For the hospitalized patient that is not allowed to smoke, but has uncomfortable cravings, a nicotine patch is often useful, since it is easily applied and requires a minimum of nursing time.

When working with a substance abuser, it is a good idea to also talk about smoking cessation. Such a patient may initially reject this direction by saying that they want to concentrate on their cocaine abuse or their prescription opioid dependence before thinking about stopping smoking. In response, one can suggest that in the long run, stopping smoking may be the most important thing they can do for their health. I have also found it useful to suggest that addiction could be considered one big thing and that smoking is just a part of it, which may be best tackled at the same time as the other drugs. It is important to use motivational enhancement techniques, not demanding that they quit or giving the message

that they are weak if they do not quit. Rather, it works best to help them develop their own motivation for quitting and they can be told that it is something to keep in mind when they are ready to give it a try. I have been pleasantly surprised at the number of patients who do stop smoking in conjunction with treatment for their substance abuse. Furthermore, even bringing up the subject, as long as it is done in a noncritical manner, lends credibility to the consultant as being interested in the patient's health, as opposed to making moral judgments about substance abuse. Even if they do not attempt to quit, cooperation regarding substance abuse treatment may increase.

20.8 Conclusion

Substance abuse related problems are frequent in patients seen by the consultation-liaison psychiatrist. Intoxication and withdrawal symptoms can complicate or obscure the presentation of medical symptoms, and the consultation-liaison psychiatrist is able to be of great help if familiar with these conditions. Comorbid psychiatric conditions, such as anxiety and depression are also common in the substance abuse population, but the consultation-liaison psychiatrist is well advised to make sure that the substance abuse issues are understood before treating those conditions, especially with medication. This is because such symptoms may be alleviated when the substance abuse issues are under control, and a rapid use of psychotropic medication may reinforce the substance abuser's tendency to see drugs as the answer to any type of discomfort or dysphoria, rather than the cause.

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