

An Overview of Substance Misuse

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Abstract Substance misuse has a profound effect in terms of harm across all areas of society. This includes high costs in terms of healthcare provision, social and economic costs as well as the effect on individuals and their families. Maintaining abstinence via psychosocial interventions is the key to reducing the prevalence but also the most difficult to achieve because of the opposing neurophysiological forces. This paper briefly reviewed the sequelae of dependence with alcohol, opiates and stimulants and the dilemma in management. **Methods:** Electronic searches of the medline (PubMed) database, Cochrane library, and science citation index were performed to identify original published studies on substance abuse and drug dependence. Relevant articles were searched from relevant chapters in specialized texts and all included.

Keywords Dependence, Psychiatric, Physical, Social damage

1. Introduction

Drug dependence includes the occurrence of withdrawal symptoms, drug use for the relief of withdrawal symptoms, subjective awareness of an inability to control drug-taking behaviour, increasing tolerance to the psychoactive properties of the drug over time, narrowing if the repertoire of drug consumption, salience of drug-taking over other activities, persistent drug use despite evidence of harm, and rapid reinstatement of drug taking after periods of abstinence. (ACMD 1998, DOH England 2007) Firstly it should be noted that the response to these drugs varies between individuals. Secondly, the dependence on a drug depends on (a) the characteristics of the individual and (b) the pharmacological properties of the drug i.e. some drugs have more abuse liability than others. (Girdwood 1987, Clare 1990, Goldstein, 2001) The development into addiction may also be influenced by inherited traits (Kendler et al, 1995, Schuckit^b, 2009). Sons of alcoholics adopted away from home are four times more likely to develop drinking problems than the adopted away sons of non-alcoholics (Clare, 1990). Alcohol and other drug dependencies share many common features in terms of aetiology, prognosis and management. Other commonly misused substances are cannabis, opiates, stimulants, hypnotics and tranquillizers, hallucinogens and solvents. Most substance abuse disorders can be considered chronic relapsing conditions resulting in severe physical, mental and social consequences (Mayet 2009). Though the specific physical and psychiatric

complications may vary, the general principles underlying the management of dependency is the same for most drugs. We discuss here dependence with alcohol, opiates and stimulants and the challenges in management.

2. Clinical Features of Alcohol Dependency

2.1. Psychiatric Complications

Delirium tremens occurs about 72 hours after withdrawal. This is characterized by tremor, restlessness, disorientation, visual hallucinations (though auditory or somatic hallucinations may also occur), autonomic arousal (fever, tachycardia, sweating) and occasionally fits. Though self-limiting over 72-96 hours, it should not be left untreated since mortality is about 10%. For this reason alcohol-dependent patients should not withdraw from alcohol without medical supervision. (Clare 1990) The management of Delirium tremens involves admission to hospital and nursing care in well-lit uncluttered surroundings. Appropriate investigations are full blood count, urea and electrolytes and liver function tests. Treatment includes parenteral vitamin B₆ (thiamine) first followed by correction of dehydration. If fits cannot be controlled with benzodiazepines (e.g. diazepam) orally or parenterally, an intravenous infusion of chlormethiazole is tried. If no fits occur, or after fits have been controlled, a reducing dose of a benzodiazepine, e.g. chlordiazepoxide, is recommended for the first 7-10 days of abstinence. Consider possibility of subdural haematoma or Wernicke's encephalopathy arising from haemorrhages in the brain stem and hypothalamus if level of consciousness fluctuates and the treatment of the latter includes intravenous thiamine and supportive care.

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(Clare, 1990, Compton et al, 2005).

Depression is common, and may reflect the pharmacological action of alcohol, a common genetic predisposition to both depression and alcohol dependency, or a psychological response to awareness of the addiction and the damage this has inflicted on the physical, psychological and social well-being of the patient and their family. The risk of suicide is 50 times higher in those who are dependent on alcohol than in the rest of the population. (Gradski B et al, 2008).

Alcoholic hallucinosis describes usually auditory hallucinations in the context of clear consciousness. These are not associated with withdrawal, and usually begin while subjects are still drinking. Hallucinations often cease if abstinence is maintained for 6 months or longer. Neuroleptic medication is indicated if these persist despite abstinence from alcohol. (ACMD, (1998), Am Psych Assoc, (2000).

Suspiciousness, irritability and pathological jealousy. The patient may very dangerously develop a delusional belief that their partner or spouse has been unfaithful. It escalates from suspicion to interrogation, surveillance and, not infrequently violence. (Am Psych Ass, 2000).

Cognitive impairment affects more than 50% of alcohol-dependent patients seen by psychiatrists, manifesting as deficits in short-term memory and learning, as well as a reduced capacity for adapting to novel circumstances, suggestive of frontal lobe damage. This brain damage reduces the capacity for initiating and maintaining abstinence from alcohol. A related phenomenon is episodic amnesia for events during periods of drunkenness. (Lishman WA et al, 1990).

Korsakoff's syndrome is a rare but severe, largely irreversible impairment of short-term memory associated with confabulation, due to necrosis in the mammillary bodies. It may appear on resolution of Wernicke's encephalopathy arising from haemorrhages in the brainstem and hypothalamus. (Clare 1990, Lishman WA et al 1990).

2.2. Physical Complications

These include an increased mortality in men who consume 6 or more units per day. The mortality is three times greater than men who consume less than this amount, a difference which is partly accounted for by heavier smoking, suicide and accidental deaths. There may be liver damage (alcoholic liver disease), leading to hepatitis, cirrhosis and liver cancer. (Cairns, 1986) Gastrointestinal complaints include gastritis, peptic ulceration, haematemesis and diarrhea, plus cancer of the oropharynx, oesophagus and stomach. Malnutrition, including thiamine deficiency; Pneumonia and/or tuberculosis associated with poverty and/or homelessness; Pancreatitis, progressing to fibrosis and calcification (chronic relapsing pancreatitis); Diabetes mellitus; Cushing's syndrome. Cardiovascular disease include atherosclerosis, hypertension, arrhythmias and cardiomyopathy, though 1-3 units of alcohol per day appear to reduce the risk of coronary artery disease. Sexual impairment result from organic impotence, reduced libido,

anxiety and dysfunctional relationships. Wernicke's encephalopathy has a high mortality and is characterized by confusion, ataxia and ocular palsy, arising from haemorrhages in the brainstem and hypothalamus. The differential diagnosis is a subdural haematoma. 'Blackouts'. i.e. loss of consciousness when intoxicated may occur; Polyneuropathy due to vitamin deficiencies, leading to flaccid weakness which starts in lower limbs with a characteristic stocking distribution. Fetal alcohol syndrome may occur. (Clare, 1990; Lancaster, 1990).

2.3. Social damage

At worst, dependency becomes a downward spiral culminating in 'park bench' destitution. Steps along the way may include unemployment, breakdown of marital and other family relationships, poverty, homelessness and crime, including drunk driving offences. (Kendler et al 1996).

3. Clinical Features of Opiate Dependency

Opiates are narcotic analgesics such as morphine, heroin, pethidine, methadone, dihydrocodeine, buprenorphine. They create a detached, pain-free, dream-like state and induce physical dependency very rapidly. The main psychiatric complications associated with opiate use are due to (1) the salience of drug-seeking behavior, (2) needle sharing, and (3) the difficulty and expense of obtaining a regular supply. (DOH England, 2007, Mayet et al, 2009).

3.1. Physical Complications

Injecting is a major source of physical morbidity. In addition to this, the composition of 'street' drugs varies greatly. There is increased mortality: heroin addicts are 16 times more likely to die than other people of the same age. One major cause of premature death is overdose. Overdose is characterized by loss of consciousness, shallow breathing and pupillary constriction (though pupils may be dilated if cerebral anoxia has occurred). The high mortality is due to respiratory depression and pulmonary oedema. Thus it is a medical emergency with the first-line management being i.v. naloxon, an opiate antagonist, given up to five times over 15 minutes. If there is no response then the coma is not due to opiate overdose. If positive response monitoring is continued as patient may need further doses of naloxone. However, it should be remembered that naloxone will produce symptoms of opiate withdrawal in dependent individuals. (Lancaster, 1990; Clare 1990).

Withdrawal symptoms, though subjectively unpleasant, are much less life-threatening than withdrawal from alcohol. Symptoms increase in intensity over 48 hrs and include abdominal cramps, diarrhea, nausea and vomiting, rhinorrhoea, lacrimation, sweating and yawning. Piloerection is a remarkable sign. Hepatitis, HIV infection and AIDS are common amongst injectors; malnutrition, pneumonia and/or tuberculosis associated with poverty

and/or homelessness; infectious endocarditis (subacute bacterial endocarditis), thrombophlebitis, false aneurysms, skin abscesses may occur due to injecting. (Mayet et al, 2009).

3.2. The Social Damage

The Social Damage are unemployment, homelessness and crime. Unlike alcohol, which is legal but may be associated with criminal behavior, opiate addicts almost always need to engage in criminal activities simply to fund their habit. Though some addicts achieve this by supplying drugs to others, the most common crimes are probably shoplifting and house breaking. Among women prostitution is a major problem, since this carries significant health risks. (Latt et al 2009).

4. Clinical Features of Stimulant Deficiency

These drugs include amphetamine, dextroamphetamine, methamphetamine, cocaine and 'crack' cocaine.

4.1. Psychiatric Complications

Acute intoxication with stimulants is characterized by restlessness, alertness, agitation, pressure of speech and insomnia which may be difficult to distinguish from mania. Though euphoria is common, some individuals become suspicious, aggressive, irritable and even violent especially among those who use crack cocaine. These symptoms are accompanied by signs of autonomic arousal, including tachycardia, hypertension, tremulousness and pupillary dilation. Crack cocaine has a very rapid onset of action ('rush') which is of relatively brief duration. The characteristic rebound dysphoria leads to repeated use and dependency. Acute confusional state (delirium), shortly after consuming drug may be accompanied by violence. (de Lima et al 2002).

Acute paranoid psychosis ('amphetamine psychosis') resembles paranoid schizophrenia and occurs in the context of clear consciousness. It has a variable time course and accompanied by anxiety, hostility, suspiciousness, agitation and ideas of reference. Diagnosis may be made clinically, especially if there is a history of drug use. Although most stimulants can be detected in urine, it is often difficult to obtain a sample. Acute management involves standard treatment of agitation, delirium or psychosis, including reassurance and careful nursing. Short-term use of a benzodiazepine may be useful if agitated or anxious, while psychotic symptoms are treated with a neuroleptic such as haloperidol. Particular attention is given to issues of safety as intoxicated and withdrawing patients may be violent and/or suicidal. Depression may occur with prolonged use, or on withdrawal of amphetamines accompanied by fatigue, anxiety and insomnia. (Nutt and Law 2009).

4.2. The Physical Complications

The Physical Complications include convulsions in those taking large doses resulting in possible fatal anoxia; myocardial ischaemia, leading to myocardial infarction; cerebrovascular accidents; malnutrition and pneumonia and ischaemia and necrosis of the nasal septum arising from repeated inhalation of cocaine, which is also a potent vasoconstrictor (Latt et al 2009).

4.3. The Social Damage

The Social Damage are similar to those for alcohol and opiates and include crime and prostitution, poverty, homelessness, and break-down of close relationships (Merikanga et al 1995).

5. Managing Withdrawal

5.1. Alcohol

Unmedicated withdrawal from alcohol is not recommended for those who are dependent in view of the risk of convulsions. Withdrawal can be safely achieved under medical supervision over 7-10 days, on an outpatient basis. A reducing dose of a benzodiazepine, e.g. chlordiazepoxide, is used to control withdrawal symptoms during this period. Though this drug is relatively safe if taken with alcohol, it is usually recommended that patients collect their medication on a daily basis, when they may also be breathalysed to confirm abstinence. Since many people who are dependent on alcohol are also depressed, it should also be possible to ascertain whether an antidepressant is indicated (Clare 1990).

5.2. Opiates

Withdrawal is managed using reducing doses of methadone titrated against severity of withdrawal symptoms. Unlike alcohol withdrawal, opiate withdrawal is rarely life-threatening and most take 7-10 days. Maintenance prescriptions of methadone are sometimes provided for patients who are unable to withdraw from opiates. Pragmatic risk minimization strategies, such as needle exchange programmes have been widely accepted by drug-treatment centres given the major health and social risks associated with continued drug use (Mayet et al 2009).

6. Maintaining Abstinence

This is the key to reducing the prevalence of substance abuse and also the most difficult to achieve. Psychosocial interventions form the basis of treatment for individuals who misuse cocaine and other stimulants, cannabis and hallucinogens (Dep of Health (England) 2007; Dimeff and Linda 2008).

Almost 90% of drug related deaths in Ireland are related to

opiate use (Lyons et al 2008). In heroin dependent individuals there is a 10-15% mortality at 10 years. The overall abstinence in the same group is 50% at 10 years, suggesting a tendency towards the eventual avoidance of substance drug use in the survivors (Lyons et al 2008). 63% of individuals entering the treatment programmes within Ireland are opioid dependent users, 16% for cannabis and 13% for cocaine. 36% were aged under 25 yrs and between 70-80% of individuals were male (Winstock and Schifano 2009). No pharmacological treatments have been identified which are effective in cases of psychostimulant withdrawal (de Lima et al, 2002; Shearer and Gowing 2004). All types of substance abuse occur within a social context, and there is good evidence that the likelihood of lapse and relapse are extremely high if this remains unchanged. However effective the management of withdrawal, substance use is frequently reinstated in response to familiar cues, such as familiar off-licences, pubs and peers. (Mayet, 2009). Days may be difficult to fill for the newly abstinent, in the absence of the routine associated with the acquisition and consumption of drugs or alcohol. Thus though difficult the best way to maintain abstinence is to convince the patient to alter his or her social context. This may involve help with rehousing, employment and reinforced through peer support, self-scrutiny, group psychotherapy, family therapy, support for relatives and social skills training.

7. Dilemma

Strong evidence supports the notion that a significant proportion of severe drug abusers are psychiatrically ill. Moreover drug misuse appears to be becoming more frequent in patients with other psychiatric disorders where it can lead to problems in treatment and poorer outcome (Nutt and Law 2009). Co-morbid post traumatic stress disorders and substance abuse is frequently diagnosed in clinical populations (Schaffer et al 2007). Individuals who abuse substances commonly develop co-morbid psychiatric illness with prevalence rates for those with opioid dependent abuse being up to 50%. This is increased by concurrent use of alcohol or other drugs especially stimulant classes of substances (Verthein et al 2005). Adolescents who abuse drugs possess special characteristics that include behavioural problems, skills deficits, academic difficulties, family problems, and mental health problems that generally have been shaped by environmental adversities and biological vulnerabilities that began in early childhood (Riggs 2002.).

8. Conclusions

There is no single cause of drug dependence. Once regular drug taking is established, neuropharmacological factors are important in determining dependence. Though the specific physical and psychiatric complications may vary, the social damages are similar and the general principles underlying the management of dependency is the same for most drugs.

Psychosocial interventions form the basis of treatment as avoidance of exposure to a drug-related environment is an important aspect in improving the prognosis.

Conflict of Interest

The authors have no potential conflict of interest including any financial, personal or other relationships with other people or organizations within three years of beginning the submitted work that could inappropriately influence, or be perceived to influence, this work.

REFERENCES

- [1] ACMD: Advisory council of the misuse of Drugs (1998). *Drug Misuse and the environment*. London Stationary Office.
- [2] American Psychiatric Association (2000). Diagnostic and statistical manual of mental disorders 4th ed. Text Revision. *The American Psychiatric association*. Washington DC.
- [3] Cairns J. (1986). The Epidemiology of cancer. In: John Cairns, (ed), *Cancer: Science and Society* (pp 35-61). W.H. Freeman and Company.
- [4] Clare AW. (1990) Psychological Medicine. In: P.J. Kumar & Michael L. Clark (eds) *Clinical Medicine* (pp868-900) Balliere Tindall.
- [5] Compton WM, Thomas YF, Conway KP, Collner JD. (2005) Developments in the epidemiology of drug use and drug use disorders. *Am J. Psychiatry* 162: 1494-1502.
- [6] de Lima MS, de Oliveira Soares BG, Reisser AA, Farrell M (2002). Pharmacological treatment of cocaine dependence: a systematic review. *Addiction* 97(8),931-49.
- [7] Department of Health (England) and the devolved administrations (2007). Drug Misuse and Dependence. *UK Guidelines on Clinical management*. London.
- [8] Dimeff LA, Linda MM. (2008) Dialectical Behaviour therapy for substance abusers: *Addict Sci Clin Pract.* 4(2): 39-47.
- [9] Girdwood R.H. (1987) Dependence on drugs and other agents. In: R.H. Girdwood (Ed) *Clinical pharmacology* (pp 181-198) Bailliere Tindall 25th edn.
- [10] Goldstein A. (2001). *Addiction, from biology to drug policy*. 2nd edition Oxford University press.
- [11] Grabski B, Dudek D, Ditka W, et al. (2008). Life-time anxiety and substance use disorder comorbidity in bipolar disorder and its relationship to selected variables. Gender and bipolar subtype differences in comorbidity. *Archives of Psychiatry and Psychotherapy* 3:5-15.
- [12] Kendler, K.S., Walters, E.E., Neale, M.C., et al. (1995). The structure of genetic and environmental risk factors for six major psychiatric disorders in women: phobia, generalized anxiety disorder, panic disorder, bulimia, major depression, and alcoholism. *Archives of General Psychiatry*, 52, 374-83.
- [13] Lancaster R. (1990) Drugs of Addiction. In: *Pharmacology in clinical practice*.(pp 232-245 William Heinemann medical

books ltd, London.

- [14] Latt N, Conigrave K, Saunders JB, Marshall EJ, Nutt D (2009). *Oxford Handbook of Addiction Medicine*. Oxford University Press. Oxford.
- [15] Lishman, W.A. (1990). *Organic psychiatry. The psychological consequences of cerebral disorder* (2nd edn). Blackwell Science, Oxford.
- [16] Lyons S, Lynn E, Walsh S, Long J. (2008). Trends in drug –related deaths and deaths among drug users in Ireland. 1998-2005. *Health Research Board Trends Series 4*: Dublin Health Research board.
- [17] Mayet S, Winstock A, Strang J. (2009). Opioids, heroin, methadone and buprenorphine. In: Gelder M, Andreason, N, Lopez-Ibor, J.,Geddes J. (Eds) *New Oxford Textbook of Psychiatry*. Oxford University press. Oxford.
- [18] Merikangas, K.R. and Angst, J. (1995). Comorbidity and social phobia: evidence from clinical, epidemiologic, and genetic studies. *European Archives of Psychiatry and Clinical Neuroscience*, 244, 297–303.
- [19] Nutt DJ, Law F. (2009) Pharmacological and psychological aspects of drug abuse. In: Gelder M, Andreason, N, Lopez-Ibor, J.,Geddes J. (Eds) (2012) *New Oxford Textbook of Psychiatry*. Oxford University press.Oxford.
- [20] Riggs PD. (2002) Treating Adolescents for substance abuse and comorbid Psychiatric Disorders. *Sci Pract Perspt* 2002;20:18-25.
- [21] Schaffer I, Najards LM. (2007). Clinical challenges in the treatment of patients with post traumatic stress Disorder and substance abuse. *Curr Opin Psychiatry* 2007;20(6) 614-618.
- [22] Shearer J, Gowing LR (2004) Pharmacotherapies for problematic psychostimulant use: a review of current research. *Drug Alcohol Rev* 2004; 23(2):203-11.
- [23] Sievwright N, Fung R (2009). Disorders relating to the use of amphetamines and cocaine. In: Gelder M, Andreason, N, Lopez-Ibor, J.,Geddes J. (Eds) *New Oxford Textbook of Psychiatry*. Oxford University press. Oxford.
- [24] Verthein U, Degkwatz P, Harasen C, Krang M (2005) Significance of comorbidity for the long-term course of opiate dependence. *Eur Addict Res*, 11,15-21.
- [25] Winstock A, Schifano F (2009): Disorders related to the use of ecstasy and other party drugs. In: Gelder M, Andreason, N, Lopez-Ibor, J.,Geddes J. (Eds) *New Oxford Textbook of Psychiatry*. Oxford University press. Oxford.