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Amphetamine Dependence

The problem of amphetamine dependence has recently come to the fore because of the sociocultural patterns of behaviour which have sprung up amongst the adolescent and young adult population, which include taking amphetamines and amphetamine barbiturate mixtures. The Interdepartmental Committee on Drug Addiction in its second report has stressed the dangers (Ministry of Health and Department of Health for Scotland 1965).

Historical Review

For many years since the the introduction of the amphetamines into medical practice in the 1930s there has been argument as to whether these drugs are addictive. The euphoriant action led to discussions of the dangers of addiction and habituation (Davidoff & Reifenstein 1937, Guttman & Sargant 1937, Council on Pharmacy 1938, Bakst 1944, Finch 1947, Leake 1958). Tolerance was also noted (Colton *et al.* 1943, Guttman 1939, Ivy & Goetzl 1943, Rudolf 1938, Harris *et al.* 1947) and denied (Delay 1950). Amphetamine psychosis was reviewed and delimited (Connell 1958) by a study which included determination of the presence of the drug in the urine. The duration of excretion of amphetamine has since been found to depend on the pH of the urine (Beckett *et al.* 1965). However, in 1957, following the realization of the dangers of amphetamine misuse, these drugs were placed on Schedule IV of the poisons rules and amphetamince inhalers were withdrawn from the market, when it transpired that there was a large rise in their sales following the placement of tablets, &c., on Schedule IV. I must draw attention to the amount of amphetamine prescribing by referring to the first report of the Interdepartmental Committee on Drug Addiction (Ministry of Health and Department of Health for Scotland 1961), usually called the Brain Committee, which noted that an analysis of some 214,000,000 National Health Service prescriptions in 1959 indicated that some 5,600,000, or approximately 2·5%, were for preparations of the amphetamines or phenmetrazine. The use of amphetamines in psychiatric practice was reviewed (Connell 1962).

Kiloh & Brandon (1962) note that 'the amphetamines in general are prescribed readily and light-heartedly.' They scrutinized the EC 10 forms dispensed by all pharmacists in the City and County of Newcastle upon Tyne during the months of May and November 1960: 'All preparations known to contain amphetamine or its derivatives, 40 in all, were listed and all scripts for these preparations were put on one side'. Of a total of 119,208 scripts for May, 4,052 were for amphetamine preparations (3·4%), whereas in November the figure was 2·5%. The amount of amphetamines prescribed by two general hospitals in Newcastle to both inpatients and outpatients was also ascertained and calculation of the total quantity of amphetamines prescribed showed an average equivalent to 200,000 5 mg tablets, 53% of which were dispensed as Drinamyl. This was recognized to be a minimal figure. These writers also drew attention to procedures used to obtain tablets in quantities greater than the doctor wishes to prescribe, e.g. arranging to see a different member of a partnership each visit in a 'rota'; claiming that prescriptions had been lost; claiming loss of the tablets themselves; or they had been thrown on the fire or put in the wash in an apron pocket; obtaining multiple prescriptions for various members of the family; registering with a number of doctors under false names if necessary; alteration of the prescription and obtaining tablets from certain chemists without prescription.

Brandon & Smith (1962) carried out a survey of 19 complete practices in the North East of England. Of the survey population, 620 patients (0·8%) received amphetamine or related drugs: 90 (14·5%) were men, 530 (85·5%) women. The largest group was middle-aged obese housewives, and the commonest reasons for the use of the drugs were obesity, depression, tiredness and anxiety. The 36–45-year-old age group was the greatest in number; 127 (20·5%) were regarded as habituated. Psychiatric disability was reported in 99 (15·9%) and of these 53 were regarded as habituated. Thus more than half the patients with psychiatric disability were habituated and 41% of habitués were regarded as abnormal. A hundred and twenty-seven (20·5%) patients had received these drugs regularly for over two years. No clear evidence of adverse effects other than habituation emerged from the data and no evidence of increasing dosage was found. Few doctors regarded these drugs as entirely unhelpful even when the patient was habituated, but 15 of the participating practitioners reported radical changes in their prescribing habits largely through fear of habituation, and three doctors declared that they virtually no longer prescribed the drug.

Brandon & Smith regard the risk of habituation as a real one. In a practice of 2,500 there would probably be 20 patients taking amphetamine at any time, and at least 4 of these would be

habituated. Reporting on the same survey, Kiloh & Brandon (1962) state that rather less than 1% of all registered patients in the practices investigated were taking amphetamine and rather more than 20% of these could be regarded as habituated or addicted, having received the drug for prolonged periods, showing dependence upon it and proving resistant to its withdrawal. Wilson & Beacon (1964), in a study of 58 patients in eleven Liverpool practices, found that 58% were habituated and also noted the occurrence of attempts to obtain more tablets, stealing tablets and so on. It can therefore be stated, categorically, that the misuse of amphetamines is very much a problem which concerns general practitioners.

The Recent Problem among Adolescents

The problem of amphetamine taking by adolescents has come to notice during the past few years, and would appear to have begun around 1960 and built up to major proportions by 1963. Reports in the lay press (Sharpley 1964, Linken 1963) and by myself in the medical journals (Connell 1964, 1965*a*, *b*, 1966) have drawn attention to the sociocultural patterns of behaviour and the dangers of this development.

For the purposes of this short presentation it can be stated that a pattern of behaviour developed involving adolescents spending weekends away from home, taking amphetamines or amphetamine barbiturate mixtures, ostensibly to keep awake and going from one all night 'club' to another, returning home late Sunday night or early on Monday morning. As time went on more and more adolescents, and even school children, were being involved, and various clinical types or progressions were described (Connell 1965*a*, 1966), which ranged from the sporadic user to the individual who became severely dependent and built up to large doses at weekends and needed to take the drug during the week as well.

As time went on two further occurrences took place: (1) The drugs became available in the suburbs, so that it was no longer necessary to go to the West End of London to get them. Thus almost any coffee bar or place frequented by adolescents began to include a few who were taking pep pills and who would involve others in this practice. (2) Much more recently it has become clear that some of those who have been taking amphetamines (usually in the form of the amphetamine barbiturate mixture – Drinamyl) have now progressed to the hard drugs and are taking heroin and cocaine.

In the early days of adolescent drug taking it was noted by Sharpley (1964) that a fringe group of prostitutes, sexual perverts and a few narcotic addicts also frequented the all-night clubs. It was pointed out (Connell 1964) that although the culture pattern at that time laid it down that to take heroin or the hard drugs was 'nutty' and therefore taboo, all the ingredients for a later change of culture pattern to heroin were there; namely, the presence of a few narcotic addicts in the same sociocultural group (usually older in age); the fact that the amphetamine takers seen in clinical practice knew where to get heroin from or whom to approach, even though at that time it was taboo, and finally that since adolescence is a period of changing culture patterns, a change of some sort could be expected.

The Diagnosis of Amphetamine Taking

A few comments are relevant concerning the diagnosis of amphetamine taking. One would expect that the symptoms and signs of amphetamine taking would be those of stimulation of the sympathetic nervous system, and this is of course, true. However, it is suprising how many amphetamine users present with little or no signs of their amphetamine taking, even though taking large doses regularly, and even when there are signs, such as dilated pupils, dry mouth, tachycardia, restlessness, talkativeness, brisk reflexes, fine tremor of the limbs, &c., these can often be easily understood in terms of the patient's anxiety and fear. This aspect has been covered in some detail elsewhere (Connell 1966), but the point I wish to make at this stage is that it is necessary to have access to biochemical facilities so that urine can be tested for the presence of the drug, to be quite sure of the real situation. After all, in the absence of pathognomonic signs of amphetamine taking, and taking into account that a drug-dependent patient is notoriously unreliable in his history of his drug taking, even the most astute physician can be forgiven for failing to diagnose amphetamine taking.

Treatment

The treatment of amphetamine dependence can be split up into two main groups: the older age group, often a tired, obese and depressed housewife, and the adolescent group.

So far as adults who are taking two or three tablets of Dexedrine or Drinamyl a day, are concerned, and where it is definite that they are not taking any more than this, it would seem that although ideally they should be helped to do without the drugs, in practice, shortage of medical manpower in terms of both family doctors and psychiatrists, dictates a maintenance method in which the individual was prescribed the drug. I use the word maintenance here to draw attention

to the fact that maintenance of a state of drug dependency is common medical practice and, of course, dependency on barbiturates may well be the most common form of this.

Treatment of any state of drug dependence can be divided into three main phases: the withdrawal phase; the early abstinent phase and the long-term treatment or supervision.

The Withdrawal Phase

It is very rare for withdrawal to be accomplished successfully as an outpatient. The patient has to be very strongly motivated indeed and well supported by family and friends, for such an attempt to be worth consideration. The temptations of withdrawal without supervision in hospital are those of attempting to obtain the drug from other sources, or replacing with another drug which may be available such as, for instance, alcohol. Furthermore, although there is no severe physical dependence on amphetamines, the withdrawal effects include not only tiredness and sleepiness, but often a depression which can be severe and which may be associated with suicidal ideas and even suicidal attempts.

Withdrawal in hospital is not difficult and there is no harm in withdrawing the patient abruptly from the drug. In those patients who have an amphetamine psychosis, or are severely restless, tense and anxious, it may be kinder to give a phenothiazine, even intramuscularly, and a barbiturate at night if required. If barbiturates have been taken as well as the amphetamine, or amphetamine barbiturate mixture, withdrawal of the barbiturate should be slow, to prevent a barbiturate withdrawal psychosis or the development of withdrawal grand mal seizures.

It is wise, in order to encourage the excretion of the drug, to give ammonium chloride, in order to ensure that the pH is on the acid side. Strict biochemical surveillance is necessary to make sure the patient has not had unknown access to the drug, for instance through a friend who has visited or even a member of the hospital staff, such as a ward orderly. The drug should be excreted by the end of a week.

The Early Abstinent Phase

In this phase a full exploration of the total situation, including neurotic problems, problems of personality and relationships with others, work and social problems, all of which comprise the total life situation of the individual, is necessary. Marital problems, in particular, are important in this respect.

In this phase the patient, having found that he can live without the drug, and who soon feels physically and mentally well, may well consider that there are no further problems. In this 'honeymoon' period it is particularly important to refrain from agreeing to precipitate discharge from hospital.

Long-term Treatment and Supervision

This phase can be summarized by regular follow-up (using biochemical supervision) and use of social agencies to give support to the patient. The assessment of another informant who knows the patient well and can give details of any mood or apparent personality change is very helpful. The development of such a change with irritability, and moodiness, &c., should be regarded as presumptive evidence of relapse to drug taking.

Treatment of the Adolescent Group

The adolescent group presents a rather different problem and has been dealt with in more detail elsewhere (Connell 1965*a*, *b*). Many of them are weekend takers only. Furthermore, the patient may be referred after many adults have told them to give up the drugs and the doctor is, to them, merely another adult who is wanting to dictate to them. In this group, therefore, it may be necessary to adopt the line that you, as the doctor, are not telling them to stop taking the drug, that they are grown up and must make up their own minds about this, but that being an expert on these matters you know that there may be various side-effects such as damage to the brain, damage to the kidneys, &c., so that it might be worth while to keep in touch to make sure all is well. In my experience, such an approach often works with even the most hostile and verbally aggressive adolescent. It also has the advantage of obtaining urine specimens for analysis, ostensibly to check on the kidneys!

In this group it is necessary to take into account the fact that the great majority of drug takers, whether at weekends or also during the week, will have problems of adolescent adjustment which require help in their own right. Thus it may be necessary to help the adolescent with his 'growing up' problems and also the parents, many of whom may be still 'babying' their adolescent and thus causing excessive levels of anti-authoritarian feeling and aggression towards themselves. Parent counselling is therefore often useful, and sometimes a parent may require psychiatric treatment in his or her own right.

The Role of the General Practitioner

The whole field of amphetamine misuse has been bedevilled by the earlier concepts of addiction and habituation, which led to the drugs which caused physical dependence and which caused an 'abstinence syndrome' on withdrawal being classified as drugs of addiction and therefore dangerous, and drugs such as the amphetamines, which did not

lead to physical dependency of the same order and did not show a physical 'abstinence syndrome', as being drugs of habituation and therefore interpreted by many doctors as being harmless. The definitions have been reviewed and this point discussed at length (Connell 1964), but more recently the World Health Organization has recommended that the term addiction be abolished and that the term drug dependency be used (World Health Organization 1964). Each type of drug dependency is then regarded as serious and its particular properties are defined. Amphetamine type of dependence is defined as:

'A state arising from repeated administration of amphetamine or an agent with amphetamine-like effects on a periodic or continuous basis. Its characteristics include – (1) a desire or need to continue taking the drug; (2) consumption of increasing amounts to obtain greater excitatory and euphoric effects, or to combat more effectively depression and fatigue, accompanied in some measure by the development of tolerance; (3) a physical dependence on the effects of the drug related to a subjective and individual appreciation of the drug's effects; and (4) general absence of physical dependence so that there is no characteristic abstinency syndrome when the drug is discontinued.'

The responsibility of the family doctor in this field is clear. The responsibility includes proper security measures over drugs and prescriptions and requires that the drug is used sensibly for particular purposes and that full supervision of the patient is provided. Repeating prescriptions for these drugs *ad lib.* and failing to keep abreast of the knowledge concerning the dangers of drugs are two of the areas in which, on the whole, the family doctor has erred. However, in mitigation, it must be noted that there has been considerable resistance to accepting the dangers of these drugs and it must therefore be accepted that a clear lead on this subject has often been lacking. Furthermore, it must also be accepted that only a proportion of those for whom these drugs are prescribed actually become dependent on them.

There is a great need for further research in this field. Not only in terms of sociological and epidemiological studies but also follow-up studies to confirm or refute the clinical impression that amphetamine dependence is a severe, relapsing condition, which is difficult to cure.

Finally, there is a great need for research to evaluate the place of these drugs in our medical armamentarium. Vast quantities are prescribed. They are little used now in psychiatric practice. Their main use is by physicians and surgeons and by family doctors for conditions which, to say the least, have not been proved to respond to this medication.

Research, therefore, by general practitioners, perhaps through the College of General Practitioners, into the effectiveness of these drugs in the conditions for which they are prescribed, would answer the question as to whether they have a place in medicine or whether they would be better dropped as therapeutic agents.

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Assessment of the Function of the General Practitioner

In regard to drug addiction, when this rare illness, or rather group of symptoms, comes into the care of the general practitioner, he is clearly the man who will best be able to help the addict to find the motivation, which is the key word for all therapeutic efforts.

Factors in Drug Addiction

There are seven factors which must be considered in the problems of drug addiction: