PAPERS AND SHORT REPORTS

What happens to opiate addicts immediately after treatment: a prospective follow up study

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Abstract

In the first British study to investigate systematically what happens to opiate addicts after treatment 50 opiate addicts admitted for inpatient treatment of their drug dependence were followed up for six months after discharge. All had been withdrawn from opiates before follow up. Six months later 26 were not using opiates: 12 had not used opiates at any time since discharge. When subjects in hospital or in prison were excluded from the analysis 21 (47%) of the subjects living in the community were not taking opiates. Many subjects used opiates within days of leaving the inpatient unit, but this first lapse did not necessarily lead to a full relapse into addictive use. During the six months after discharge several subjects used opiates on a less than daily basis. During each two month period throughout the six months of follow up the proportion of subjects who were occasional users fell, the proportion of abstinent subjects grew, and the proportion of daily users (assumed to be readdicted) remained constant.

Although many of the addicts relapsed soon after treatment, it was encouraging that almost half were opiate free after six months. These results have important implications for the treatment of drug addicts.

Introduction

It has been known for many years that the addictive disorders are relapsing conditions.^{1,3} It is surprising, therefore, that there have been so few systematic investigations of relapse, and fewer still of abstinence, among drug addicts. No empirical research looking at these issues among drug addicts in Britain has been reported.

Litman *et al* in London conducted a series of studies that looked at the factors associated with relapse among problem drinkers after treatment.^{4,5} Important differences were found between those who relapsed and "survivors" in terms of factors leading to relapse, coping behaviour, and the perceived effectiveness of coping behaviour. Similarly, Marlatt looked at the circumstances surrounding relapse among American alcoholics.^{6,7} Several investigators in the United States looked at factors associated with relapse among drug addicts⁸⁻¹¹; there are, however, problems in interpreting these findings in Britain—for example, differences in the availability and purity of drugs between the two countries as well as more general sociocultural differences in patterns of drug abuse.¹² More importantly perhaps, some of the American studies used unusual definitions of relapse, some defining it not as a relapse from abstinence to drug use but as the use of illegal drugs by patients receiving maintenance treatment with methadone.^{3,8}

One of the few systematic studies of outcome among drug addicts to be conducted in Britain was that of Stimson *et al*, which followed up a group of heroin users over 10 years.^{13,14} The subjects were all originally receiving prescriptions for heroin from drug dependence clinics, and the reports describe the progress of this group over the follow up period. The project, however, was not designed to investigate addicts who had been withdrawn from their drug of dependence or to look at the event of relapse. There remains a need for such a British study. A previous investigation reported significant differences in the proportions of addicts achieving complete withdrawal from opiates between inpatient and outpatient treatment,¹⁵ inpatients being much more likely to complete the withdrawal programme. Withdrawal is, however, only the first phase of treatment, and little is known about the centrally important issue of what happens to addicts after they leave treatment. The present investigation looked at a group of opiate addicts who were admitted for inpatient withdrawal and treatment for drug dependence and followed them up during the six months after their

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discharge. The study was primarily concerned with the relapse to or continued abstinence from drug use, in particular opiate use, in this group.

Subjects and methods

We studied 50 subjects admitted consecutively to this drug dependence unit; all were opiate addicts undergoing inpatient detoxification and treatment. Subjects who left the unit before completing withdrawal were excluded as a drug free state was a precondition of entry to the study. The 50 subjects who completed the withdrawal programme came from 57 consecutive admissions to the unit (an 88% completion rate). This is consistent with the findings of our earlier study, when 81% of inpatients completed withdrawal.¹⁵ All subjects were dependent on opiates at the time of admission.

The subjects comprised 36 men and 14 women with an age range of 15-38 (mean 27). They had started using drugs at an average age of 16 (range 11-30). Regular opiate use had started at an average age of 21 (range 12-34). For most subjects ($n=27$) the main opiate used at the time of admission was heroin. Five subjects preferred methadone, four preferred other opiates (dextromoramide tartrate (Palfium), dipipanone hydrochloride (Diconal), codeine linctus, or dihydrocodeine tartrate (DF 118)), and 14 regularly used more than one opiate (usually heroin and methadone) with no single preferred drug. Most subjects used several drugs, and many used amphetamines, barbiturates, and tranquillisers. At the time of admission most of the heroin users injected the drug intravenously, but 11 smoked it. Methadone was taken orally by nine subjects and injected by eight. Other opiates were taken orally by six subjects and injected by five. These figures total more than 50 because some subjects regularly used more than one opiate.

Treatment included a 21 day period of withdrawal using methadone followed by a period of assessment and rehabilitation, when subjects were given programmes tailored to their specific needs. At the time of the study the drug unit lacked resources to provide any systematic aftercare for addicts leaving treatment, though all were offered the option of attending the outpatient clinic for support after discharge. The extent to which subjects sought treatment or support from helping agencies varied considerably: some contacted statutory or non-statutory drug treatment services, some made sporadic contact with a variety of services, and some did not make contact at all.

Data were collected by semistructured interviews. All interviews were administered by two trained interviewers, and replies were recorded on forms designed for the purpose. Subjects were first interviewed within four days after their admission to the inpatient unit but before their detoxification had begun. This interview covered demographic features such as age, sex, educational state, and socioeconomic background; a drug history; details of current drug use; and intentions about future drug use. The second interview took place about two weeks after discharge from the inpatient unit or as soon as possible after the subject had used an opiate if this was known. Sometimes this sort of information was gained as a result of the subject recontacting the clinic with a request for help after relapsing; on other occasions a friend or relative would contact the clinic. All subjects were asked in detail about all types of drug taking behaviour since discharge and about their current life circumstances: where they lived, how they filled their day, who they were seeing, and other potential risks or protective factors. The third interview, which took place roughly six weeks after discharge, was identical with the second and was administered only to subjects who had not lapsed by the time of their second interview. Forty seven of the fifty subjects were contacted and interviewed at two weeks and 19 at six weeks (these were the subjects who had not relapsed at two weeks and the three who had not been previously contacted for interview). The final interview took place about six months after discharge and covered similar material to the previous follow up interviews.

The inpatient interview was conducted in an interview room in the drug unit. Follow up interviews took place at the outpatient clinic, at the subjects' homes, or wherever else subjects agreed to meet the interviewers. Urine specimens were taken at the time of the follow up interviews and analysed for the presence of the major psychoactive drugs.

Results

At the six month follow up 26 subjects were opiate free: 12 had remained totally opiate free throughout the six months and 14 had used opiates at some time since discharge but were no longer taking them. In addition, the six month follow up showed that eight subjects occasionally used opiates

(defined as taking any opiate less than once a day). The remaining 16 subjects were taking opiates daily and were regarded as being readdicted.

The results of urine analysis were compared with the interview data for opiate use at all of the follow up points (two weeks, six weeks, and six months). Urine specimens were obtained from 92% of the combined sample for the two and six week follow ups, and there was complete concordance between interview data and urine results regarding opiate use. At the six month follow up 40 subjects gave urine specimens and the concordance between the interview data and urine results was 90%: in four cases subjects reported not using opiates but a positive urine result was obtained.

Of the subjects who were abstinent at six months, three were in prison and two were receiving inpatient treatment for drug dependence. When these subjects were excluded from the analysis the number of abstinent subjects dropped to 21 (47%) of those who were living in everyday settings without external prohibitions against drug use.

Thirty eight of the 50 subjects used opiates at some stage. A total of 23 lapsed before or within a week after leaving the unit: five during their admission, which resulted in their discharge; seven the day they left the inpatient unit; and 11 within the next two days. A further 13 subjects lapsed within the next five weeks. The other two subjects remained drug free for at least two months before their first opiate use. The figure shows these results. Initial lapses did not necessarily lead to continued use—for example, of the 36 subjects who used opiates within the first six weeks after discharge, eight did so on only one occasion.

Cumulative "survival" curve showing percentage of subjects who did not use opiates during the six month follow up period.

Statements of the numbers of subjects who were using or not using drugs at a specific time provide one indicator of outcome. As the drug taking behaviour of our subjects was complex and changed during the six month follow up we attempted to describe patterns of drug use over time. The total follow up period was divided into three equal periods of roughly two months (depending on the precise follow up time for each subject), and each subject's use or non-use of drugs within these periods was examined and coded according to the predominant pattern—that is, whether the person was mainly abstinent, using less than once a day, or using opiates once or more a day during these times.

During the first two months 17 subjects were predominantly drug free; 14 were occasional users, three using opiates less than once a week and 11 more than once a week but less than daily; and 19 were daily users. During the second two months the number of non-users had risen to 21 and the number of daily users to 21; eight subjects were using opiates occasionally (less than daily). During the final two months the number of non-users was 25 and the number of daily users 19, with only six subjects using opiates less than daily. Thus the number of occasional users dropped steadily throughout the six month period and the number of abstainers rose. It must not be assumed that the same subjects were necessarily represented in the different categories across time. Of the 38 subjects who used opiates at any time after discharge, 24 (63%) had at least one period of abstinence longer than one week during the follow up.

The doses of opiates used and the routes by which drugs were taken varied

considerably. Because of the difficulties of combining doses of different opiates—for example, illicit heroin and pharmaceutical methadone—doses were divided into three broad categories: light, medium, and heavy. These were defined as follows: light use, less than 1/8 g illicit heroin or less than 30 mg methadone a day; medium use, between 1/8 and 1/2 g illicit heroin or between 30 and 60 mg methadone a day; and heavy use, more than 1/2 g illicit heroin or more than 60 mg methadone a day. These definitions although open to discussion, were adopted with regard to previous research on the amounts used among London addicts and in the light of published guidelines for clinical practice.¹⁵⁻¹⁸

On admission only three subjects were light users, 26 medium users, and 21 heavy users. During the last two months of follow up, of the 25 subjects who had taken opiates, 10 were light users, 12 medium users, and three heavy users. One of these 25 subjects stopped using opiates during this period and was drug free at the six month follow up. The route by which subjects took their opiates also changed over the six months. At admission 30 people were injecting heroin intravenously, while throughout the six months only 17 subjects (45% of the lapsed sample) reported injecting opiates on any occasion.

Some of the subjects took drugs other than opiates. Of the 26 people who were opiate free at six months eight were using cannabis less than daily (the remaining 18 were non-users). No subject who was abstinent from opiates was using cocaine or barbiturates, although two were using amphetamines less than daily and one was using tranquillisers. One subject who was abstinent from opiates was drinking alcohol heavily at six months; two others reported heavy use of alcohol at some point during the follow up period. (Heavy use of alcohol is defined according to the criteria of Litman.¹⁹)

Proportionally fewer women than men were completely abstinent from opiates throughout the six months. Only one of the 14 women did not use opiates compared with 11 of the 36 men; this difference fell just above the 5% significance level ($p=0.08$, Fisher's exact test). A further comparison of frequency of use by those subjects who took opiates showed that the women tended to take opiates more frequently than the men during the first two months after finishing treatment ($t=2.3$, $p<0.05$).

Discussion

This is the first British study to investigate systematically relapse among opiate addicts after treatment, and the results are therefore of particular interest. It has often been assumed that outcome is poor among such subjects. Schur, for instance, commented that "even optimistic practitioners recognise that relapse to the further use of drugs is the rule rather than the exception" and that "the likelihood of accomplishing permanent cures is slim."²⁰ It has also been stated that regardless of the type and intensity of treatment "the great majority of addicts simply resume drug use."²¹ In a review of empirical studies of the clinical course of addiction it was suggested that no more than 15% of subjects could be expected to be abstinent after one year.²²

It is therefore both surprising and gratifying that 47% of our subjects who were living in the community six months after discharge from inpatient treatment were not taking opiates. The total proportion of subjects who were abstinent was 52%, but as this included several people who were abstinent under compulsory supervision in prison or voluntarily abstinent but under supervision in hospital this figure is less informative. Twelve subjects remained abstinent from opiates throughout the entire six month period. A further 14 subjects used opiates but subsequently gave up and were not taking them at the six month follow up.

During the very earliest stages of the study it looked as though the more pessimistic views about outcome would be confirmed. Of the subjects who used opiates after discharge, most did so within a very short time of leaving the unit: seven on the day of discharge and, another seven within the next two days; altogether 18 had lapsed within one week of leaving the unit. The immediate return to opiate use, which was often made known to the treatment staff either by the patient or by others who were in touch with the patient, was a conspicuous feature of our results. In the absence of more detailed empirical evidence about outcome among opiate addicts this seemingly immediate relapse of a large proportion of treated patients can, and often does, have a demoralising effect on those who work with drug addicts. This may be one of the factors contributing to the high "burnout" rate among such workers. Our

results, notably the 47% (or 52%) abstinence rate at six months, provide evidence to counter such a pessimistic view.

Our findings suggest that there may be a difference in outcome among male and female addicts. Women tended to be less likely to remain completely abstinent from opiates after finishing treatment, and on returning to opiate use they tended to use opiates more frequently than men. Comparatively little is known about the special needs of female addicts. As women have consistently made up between a quarter and a third of admissions to this centre, however, it is important that this effect should be investigated further.

It is interesting that both the age at which the subjects first used any drug and the age at which they started regularly using opiates varied considerably (from 11 to 30 and from 12 to 34, respectively). The fact that in some cases drug use began as late as 30 and regular opiate use at 34 is contrary to common preconceptions about illicit drug misuse and confirms the heterogeneity of the population who misuse drugs.

The first lapse to opiate use does not seem necessarily to herald a return to full blown dependence. A substantial proportion of those who used opiates after discharge were opiate free at six months. Among those who were still taking opiates at the six month follow up eight were doing so less than once a day and therefore may be regarded as not physically dependent. This means that despite the startlingly high lapse rate immediately after discharge, 68% of the sample were not addicted to opiates six months after finishing treatment. If the three subjects in prison are excluded from the analysis on the grounds that their abstinence was forced the figure drops to 31/47 (66%), and if the two other subjects who were receiving inpatient treatment for drug dependence are also excluded the figure drops again to 29/45 (64%). As previous estimates of relapse rates have tended to be considerably higher than these results are both interesting and encouraging.

It has been suggested that some addicts remain free of opiates after treatment only at the cost of substituting alcohol or other drugs for the opiates. This did not seem to occur in our subjects. Only two had used alcohol heavily at any point during the six month follow up and only one was drinking heavily at six months; this man was not using opiates. None of the abstinent subjects was using other drugs on a regular daily basis, though eight of the opiate free subjects said that they were using cannabis less than daily. None of the abstinent subjects was using cocaine at six months. The observation that substitution did not occur is similar to that of Stimson and Oppenheimer.¹⁴

Our results have several implications both theoretical and practical. In terms of clinical practice the period immediately after discharge is obviously a time of extremely high risk for the person leaving treatment and aftercare services are needed to support addicts at this time.²³ In view of the considerable costs of treating addicts it is imperative that the hard won gains of inpatient care should not be allowed to disappear through lack of attention being paid to this critical phase of treatment. The results also confirm that one lapse need not lead to a full blown relapse. In the terms of Marlatt's model, one lapse does not necessarily produce the "abstinence violation effect," in which subjects abandon any attempt to maintain control over their drug taking.²⁴ Many people took opiates soon after discharge but did not subsequently become regular daily users.

The treatment programme before the follow up period aimed at complete abstinence from opiates, and no provision was made for teaching the addicts how to control their drug use. The fact that many addicts did not return to full opiate use despite lapsing for a period is notable. It would probably be helpful to include in the treatment package some component specifically aimed at strengthening such controlling responses if a lapse were to occur.

Use of opiates on an occasional (less than daily) basis was not a stable pattern of drug taking among the addicts after treatment. The numbers of people who were taking opiates occasionally dropped consistently throughout the six months. This may reflect the difficulty that previously addicted people have in controlling their use of opiate drugs or it may indicate that occasional use of such drugs is no longer sufficiently satisfying for them to continue in such

use. It is, however, encouraging that occasional users seemed to move towards abstinence rather than daily use. Other features of the results could also be regarded as encouraging—for example, even among those individuals who were taking opiates again at six months the amounts used were lower than at admission to treatment: the number of high dose users had dropped from 21 to three. Moreover, fewer subjects were taking opiates by injection: their number had dropped from 30 who were injecting regularly at admission to only 17 who had injected at any time during the six months after discharge. As the admission of the subjects studied coincided with the beginning of the campaign against the acquired immune deficiency syndrome this reduction in injecting may have been due in some part to a greater awareness of the hazards of injecting. Other studies have suggested that addicts are capable of modifying their drug taking behaviour to take account of such information.²⁵ This result also suggests the value of further research into the possibilities of building "harm reduction" packages into treatment programmes aimed at problem drug takers.

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Successful treatment of acute mountain sickness with dexamethasone

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Abstract

A double blind, randomised, placebo controlled trial of treatment with dexamethasone for acute mountain sickness was performed in the Capanna "Regina Margherita" at an altitude of 4559 m in the Alps Valais. After 12-16 hours of treatment (8 mg dexamethasone initially, followed by 4 mg every six hours) the mean acute mountain sickness score decreased significantly from 5.4 to 1.3, and eight of 17 patients became totally asymptomatic. Mean arterial oxygen saturation rose from 75.5% to 82.0%, and there

was a small increase in standard spirometric measurements. In the placebo group none of these variables changed significantly.

It is concluded that dexamethasone may be used as emergency treatment for acute mountain sickness to facilitate safe descent to a lower altitude.

Introduction

The early stages of acute mountain sickness are characterised by peripheral oedema, headache, lassitude, insomnia, and nausea. These may progress to vomiting, ataxia, severe lassitude, breathlessness, and frank pulmonary or cerebral oedema.^{1,2} The syndrome occurs in subjects who rapidly ascend to altitudes of 3000 m or more, taking from a few hours to a few days to develop. The incidence of acute mountain sickness in the Alps correlates with the speed of ascent and the absolute altitude.³

Acute mountain sickness may be prevented in most cases by graded ascent and prophylaxis with acetazolamide.^{1,4,5} Recently, dexamethasone has been shown to prevent the symptoms of acute mountain sickness in an altitude chamber, when its beneficial effects were thought to be due to a reduction in brain oedema.⁶

The only effective remedy for patients with fully developed acute

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