variables in this connection is the composition of the family.

References

COHEN, R. L. (1979) Note on automated systems, minimal clinical data systems and computer-assisted diagnostic systems. In *Basic Handbook of Child Psychiatry*, vol. I (ed. J. D. Noshpitz), pp. 656–657. New York: Basic Books.

KALTER, N., RIEMER, B., BRICKMAN. A., *et al* (1985) Implications of parental divorce for female development. *Journal of the American Academy of Child Psychiatry*, **24**, 538–544.

KELLAM, S. G., ENSMINGER, M. E. & TURNER, R. J. (1977) Family structure and the mental health of children: concurrent and longitudinal community-wide studies. *Archives of General Psychiatry*, **34**, 1012–1022.

LIEFF, J. D. (1987) *Computer Applications in Psychiatry*. Washington, DC: APA.

LOONEY, J. G., CLAMAN, L., MOIR, R., *et al* (1984) Data systems in child psychiatry: present status and future promise. *Journal of the American Academy of Child Psychiatry*, **23**, 99–104.

MCDERMOTT, P. A. & HALE, R. L. (1982) Validation of a systems-actuarial computer process for multidimensional classification of child psychopathology. *Journal of Clinical Psychology*, **38**, 477–486.

ROGHMANN, K. J., BABIGIAN, H. M., GOLDBERG, I. D., *et al* (1982) The increasing number of children using psychiatric services: analysis of a cumulative psychiatric case register. *Pediatrics*, **70**, 790–801.

SNYDERMAN, B., MAGNUSSEN, M. G. & HENDERSON, P. B. (1979) Standardized data collection. In *Basic Handbook of Child Psychiatry*, vol. 1 (ed. J. D. Noshpitz), pp. 657–675. New York: Basic Books.

STEINHAUSEN, H.-C., VON ASTEN, S. & GÖBEL, D. (1987) Family composition and child psychiatric disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, **26**, 242–247.

THORLEY, G. (1982) The Bethlem Royal and Maudsley Hospitals' clinical data register for children and adolescents. *Journal of Adolescence*, **5**, 179–189.

VAN EERDEWEGH, M. M., CLAYTON, P. J. & VAN EERDEWEGH, P. (1985) The bereaved child: variables influencing early psychopathology. *British Journal of Psychiatry*, **147**, 188–194.

VERHULST, F. C., BERDEN, G. F. M. G. & SANDERS-WOUDSTRA, J. A. R. (1985) Mental health in Dutch children: (II) The prevalence of psychiatric disorder and relationship between measures. *Acta Psychiatrica Scandinavica*, **72** (suppl. 324).

WONG, C. K. (1987) The child psychiatric patient database system of the Chinese University of Hong Kong. *Methods of Information in Medicine*, **26**, 195–200.

*P. D. A. Treffers, *Professor of Child and Adolescent Psychiatry, University of Leyden and Medical Director of the Academic Centre for Child and Adolescent Psychiatry Curium in Oegstgeest*; A. W. Goedhart, *Lecturer in the Department of Child and Adolescent Psychiatry, University of Leyden*; J. W. Waltz, *General Director of the Academic Centre for Child and Adolescent Psychiatry Curium in Oegstgeest*; E. Koudijs, *Research Assistant, Department of Child and Adolescent Psychiatry, University of Leyden, the Netherlands*

*Correspondence: *Academisch Centrum Kinderen Jeugdpsychiatrie Curium, Endegeesterstraatweg 27, 2342 AK Oegstgeest, the Netherlands*

British Journal of Psychiatry (1990), **157**,748–752

Acute Blocking of Naloxone-Precipitated Opiate Withdrawal Symptoms by Methohexitone

N. LOIMER, R. SCHMID, K. LENZ, O. PRESSLICH and J. GRÜNBERGER

In a double-blind placebo-controlled trial of 18 patients, methohexitone blocked objective signs of opiate withdrawal caused by a bolus injection of naloxone. Furthermore, in continuing the naloxone therapy for 48 hours, no withdrawal signs appeared. Levels of withdrawal distress returned to normal levels within six days. This approach can be regarded as an effective and well tolerated withdrawal therapy with low drop-out rates.

Since Wilker *et al* (1953) demonstrated that an opiate antagonist can precipitate an abstinence syndrome in opiate-dependent subjects, opiate antagonists have been tried as therapeutic agents (Resnick *et al*, 1977; Charney *et al*, 1986) in opiate detoxification treatment. Recently Hendrie (1985) showed that high

doses of naloxone are able to attenuate the withdrawal syndrome in opiate-addicted rats. Although Vlissides *et al* (1988) could not reproduce this study in humans because of the acute withdrawal syndrome precipitated by naloxone within minutes after administration, our earlier results confirmed Hendrie's data (Loimer *et al*, 1988).

Eisenberg (1985), finding that opiate-addicted rats pre-treated with phenobarbital have a more attenuated withdrawal response to naloxone than those pre-treated with other substances, suggested that, in humans, the acute onset of withdrawal symptoms after naloxone injection could be overcome by co-medication with a barbiturate. The aim of the following study was to test this assumption that the acute naloxone action in opiate addicts will be influenced by a barbiturate.

Method

Eighteen patients (three women, 15 men, aged 20–35 years), admitted to the Psychiatric University Hospital of Vienna for a short in-patient opiate detoxification programme, were studied. All patients satisfied DSM-III-R diagnostic criteria for opiate dependence (American Psychiatric Association, 1987) and generally had an opiate addiction history of 2–18 years. All patients abusing drugs other than opiates were excluded: to identify these, urine specimens were tested for opiates and other drugs of abuse by EMIT-tests before admission. All patients gave written informed consent to the study which previously had been approved by the ethical committee of the University of Vienna. The study was performed according to the principles of the Declaration of Helsinki. All patients taking part in this study were admitted to the hospital 24 hours before the beginning of the treatment and underwent a physical examination.

During the seven-day study, withdrawal symptoms were rated in two ways. Firstly, daily at 8 a.m., the patients completed a self-rating questionnaire based on that by Kolb & Himmelsbach (1938) which included 20 items associated with withdrawal distress: concentration, appetite, craving, pessimism, activity, anxiety, sleep, restlessness, mood, irritability, pain, sexual appetite, sweating, diarrhoea, insomnia, tremor, thinking about drugs, weakness, flushes, and aching bones and muscles. Secondly, during the double-blind trial and daily at 8 a.m., patients were rated by an independent psychiatrist on a nine-item scale, based on that by Wang (1974), which measured the presence and severity of withdrawal. Withdrawal symptoms were given different weight: yawning, epiphora, sweating, shivering (one point each); stomach pain, nausea, goose pimples, trembling, muscular pain (three points each); restlessness, vomiting (five points each). Scores were added to give a measure of withdrawal severity.

The patients were randomly allocated into a naloxone and placebo group (nine patients in each group) according to a double-blind design.

For the first two days of the study each patient received a single oral dose of morphine daily (100–300 mg morphine sulphate), the last being administered 12 hours before the

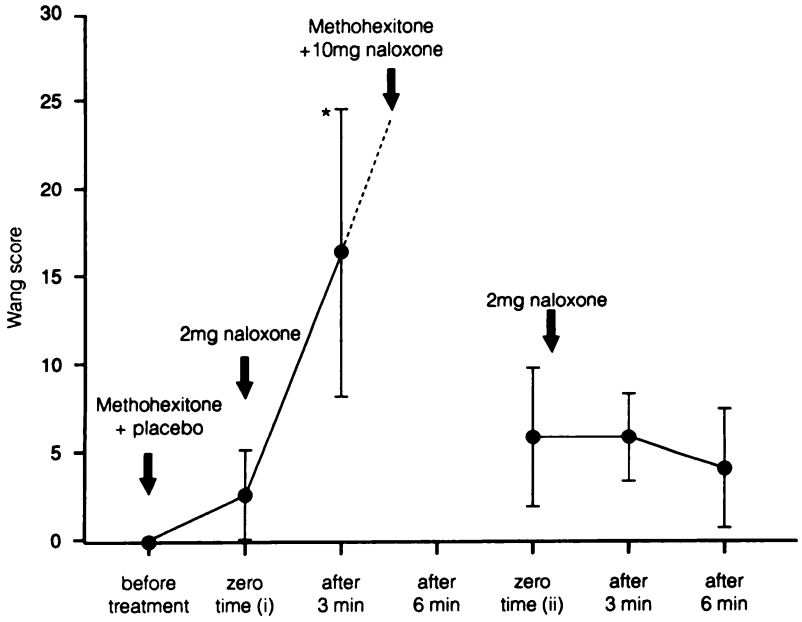

FIG. 1 Group B: effects on mean Wang score (s.d. shown by vertical lines) of a provocation test with 2 mg naloxone after placebo–methohexitone treatment and after subsequent naloxone (10 mg)–methohexitone treatment in opiate addicts ($n=7$; $^*P<0.01$; zero time = time after action of methohexitone (i) or methohexitone–naloxone (ii) had worn off).

https://doi.org/10.1192/bjp.157.5.748 Published online by Cambridge University Press

double-blind trial began. This ensured that no patient showed any withdrawal signs at the start. Twelve hours after this final morphine intake anaesthesia was induced in each patient by injection of 100 mg methohexitone (Brietal) without any pre-medication. Then the patients were intubated and artificially ventilated, and anaesthesia was maintained by a further injection of 400 mg methohexitone. Immediately afterwards 10 mg naloxone (Narcanti) (group A) or placebo (group B) was administered intravenously as bolus. When the narcotic effect of methohexitone had fully worn off (approximately 30–40 minutes later) patients were rated for withdrawal signs by an independent rater by means of the revised nine-item Wang scale. Thereafter, 2 mg naloxone was administered intravenously as a provocation test, and the Wang rating procedure was repeated three and six minutes later. In the event of severe withdrawal signs following the provocation test, indicating that the patient had received the placebo, brief anaesthesia was repeated by the injection of 250 mg methohexitone in total. Identical to the procedure in group A, patients then received 10 mg naloxone by means of a bolus injection. After the narcotic effect had again fully worn off, the whole rating procedure and the provocation test was done as before.

After this, the study was continued in an open design for both groups. All patients received intravenous naloxone (0.8 mg/h), for the following 48 hours. Observation of the patients then continued until the end of the study.

In order to observe all patients fully, admission time was generally seven days in total. During this time, urine samples were collected every day and tested for opiates, and as noted before, the self-rating and Wang scales were filled out every morning at 8 a.m.

Results

In group B (the placebo group), after the action of methohexitone had worn off, only minimal withdrawal signs were seen. However, a provocation test (2 mg intravenous naloxone) precipitated acute and severe withdrawal symptoms (Fig. 1). Because withdrawal signs in these patients were generally so severe, further rating was discontinued. Patients were anaesthetised again with methohexitone, which immediately interrupted all withdrawal symptoms.

In group A (the naloxone group), neither during barbiturate action nor after the anaesthetic effect had worn off were any but minimal withdrawal signs recorded, although they had received 10 mg of naloxone during the anaesthesia. Even the provocation test with 2 mg naloxone did not precipitate a change in the revised Wang score. Similar results were observed for group B following the second barbiturate application: after the injection of 10 mg naloxone, neither during nor after the methohexitone action were any severe withdrawal signs observed (Fig. 1). As with group A, a subsequent provocation test with 2 mg naloxone did not lead to changes in the Wang scores.

Following this treatment, when both groups received naloxone (0.8 mg/h) for a further 48 hours, no increase in withdrawal symptoms was observable in the Wang scale at any time.

In the self-rating tests, an increase in subjective

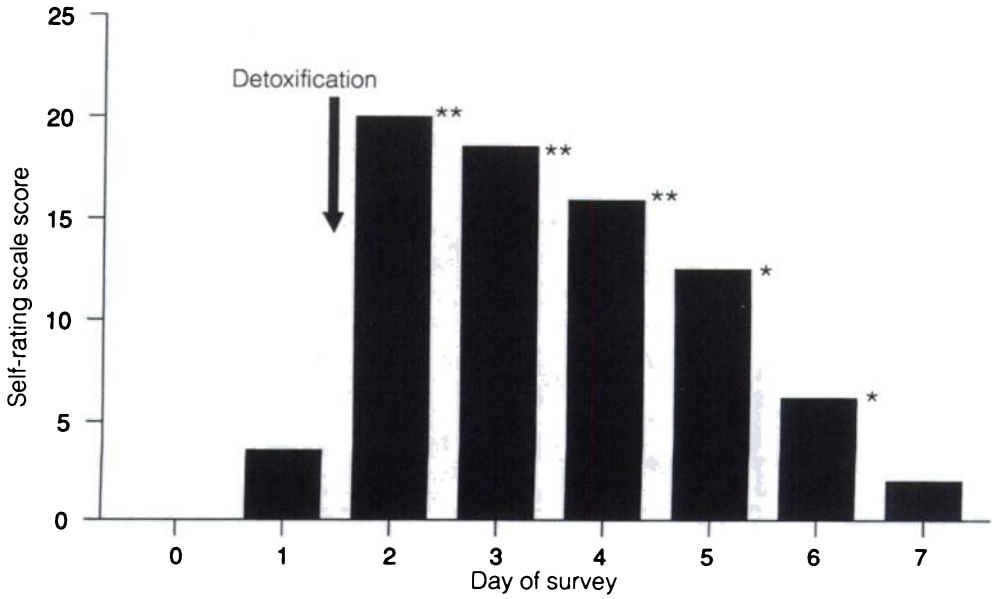

FIG. 2 Mean score on self-rating withdrawal scale for all patients ($n = 18$) during seven days of study including period of detoxification treatment (*$P<0.05$, **$P<0.01$).

https://doi.org/10.1192/bjp.157.5.748 Published online by Cambridge University Press

withdrawal distress was observed after the beginning of the described withdrawal regimen on the second day (Fig. 2). It steadily decreased during the next four days, even during the continued naloxone regimen, and base levels, similar to those which patients had shown during chronic opiate abuse, were seen after five to seven days. Furthermore, 48–72 hours after the start of the detoxification, all patients showed opiate negative urines.

This treatment regimen was well tolerated by the patients, none of whom dropped out of the study. All of the patients were discharged from the hospital after seven days of admission with only minimal levels of observable subjective or objective physical withdrawal symptoms. However, in our experience, patients do not require any special care after the acute detoxification procedure, and, in a routine schedule, might be discharged after two to four days.

Discussion

This study shows that the *acute* onset of withdrawal symptoms induced by naloxone in opiate addicts is blocked by the acute action of the barbiturate methohexitone. After administration of a high dose of naloxone, a dramatic provocation of withdrawal would be expected (Wikler *et al*, 1953). This was not observed when naloxone had been given during the pharmacological action of the barbiturate (group A).

In group B (placebo), shortly after the anaesthesia wore off, an acute withdrawal was provoked by only 2 mg naloxone. These results suggest that the severity of morphine withdrawal precipitated by naloxone decreases under the acute action of the barbiturate methohexitone, but cannot be prevented by a barbiturate *pre*-treatment. These data also indicate a paradoxical pharmacological action of naloxone: high doses of naloxone administered during a short barbiturate anaesthesia will prevent the onset of withdrawal signs. In group A, no distressing reaction was seen following a provocation test with 2 mg naloxone after the barbiturate action had worn off. These data confirm the observations of Hendrie (1985) in animals and our own results in humans (Loimer *et al*, 1988) that high doses of naloxone seem to suppress effectively the abstinence syndrome in opiate addicts. Although this paradoxical pharmacological action of naloxone cannot be explained by its known action on the opiate system, it seems that higher doses of naloxone are necessary as Vlissides *et al* (1988) have already suggested.

These observations suggest the basis for a fast and efficient detoxification treatment. In contrast to that of Gossop *et al* (1987) our study showed that patients with a long history of opiate addiction were symptom free five to seven days after detoxification. Unlike Brewer *et al* (1988), who described a naltrexone–clonidine detoxification treatment causing substantial discomfort for patients, we found that by continued naloxone infusion after high-dose naloxone loading during brief methohexitone anaesthesia, only mild objective withdrawal signs were observed. As Gold (1979) pointed out, many treatments causing abstinence syndromes lead to an early relapse. Our design offers a way to decrease such relapse during opiate detoxification: the fact that only mild (objective) withdrawal symptoms result make the treatment attractive to drug addicts afraid of such symptoms, while eliminating the need for heavy sedation for several days (Kleber & Riordan, 1982).

Acknowledgement

We would like to thank the Österreiche National Bank for funding this study (Projekt NR.:3360).

References

American Psychiatric Association (1987) *Diagnostic and Statistical Manual of Mental Disorders* (3rd edn, revised) (DSM-III-R). Washington, DC: APA.

Brewer, C., Rezae, H. & Blailey, C. (1988) Opioid withdrawal and naltrexone induction in 48–72 hours with minimal dropout, using a modification of naltrexone-clonidine technique. *British Journal of Psychiatry*, **153**, 340–343.

Charney, D. S., Heinger, G. R. & Kleber, H. D. (1986) The combined use of clonidine and naltrexone as rapid, safe and effective treatment of abrupt withdrawal from methadone. *American Journal of Psychiatry*, **143**, 7.

Eisenberg, R. M. (1985) Effects of chronic treatment with diazepam, phenobarbital or amphetamine on naloxone-precipitated morphine withdrawal. *Drug and Alcohol Dependence*, **15**, 175–181.

Gold, M. S. & Kleber, H. D. (1979) A rationale for opiate withdrawal symptomatology. *Drug and Alcohol Dependence*, **4**, 419–424.

Gossop, M., Bradly, B. & Phillips, G. T. (1987) An investigation of withdrawal symptoms shown by opiate addicts during and subsequent to a 21-day in-patient methadone detoxification procedure. *Addict Behaviour*, **12**, 1–6.

Hendrie, C. A. (1985) Opiate dependence and withdrawal – a new synthesis? *Pharmacology Biochemistry & Behavior*, **23**, 863–870.

Kleber, H. D. & Riordan, C. E. (1982) The treatment of narcotic withdrawal: a historical review. *Journal of Clinical Psychiatry*, **43**, 30–34.

Kolb, L. & Himmelsbach, C. K. (1938) Clinical studies of drug addiction, III. *American Journal of Psychiatry*, **94**, 759–799.

Loimer, N., Schmid, R., Presslich, O., *et al* (1988) Naloxone treatment to overcome opiate withdrawal syndrome. *British Journal of Psychiatry*, **153**, 851–852.

Resnick, R. B., Kestenbaum, R. S., Washton, A., *et al* (1977) Naloxone-precipitated withdrawal: a method for rapid induction onto naltrexone. *Clinical Pharmacology and Therapeutics*, **21**, 4.

Vlissides, D. N., Jenner, F. A. & Liappas, I. A. (1988) The use of naloxone during the withdrawal syndrome from heroin. *British Journal of Psychiatry*, **152**, 565–567.

Wang, R. I. H., Wiesen, R. L., Lamid, S., *et al* (1974) Rating the presence and severity of opiate dependence. *Clinical Pharmacology and Therapeutics*, **16**, 653–658.

WIKLER, A., FRASER, H. F. & ISBELL, H. (1953) Nallylnormorphine: effects of single doses and precipitation of acute "abstinence syndromes" during addiction to morphine, methadone or heroin in man (post-addicts). *Journal of Pharmacology and Experimental Therapeutics*, **109**, 8–20.

*Norbert Loimer, MD, PhD, *Intensive Care Unit, Psychiatric University Clinic of Vienna, Währinger Gürtel 18–20, A-1090 Vienna, Austria*; Rainer Schmid, PhD, *Laboratory of Psychoactive Drug Analysis, Psychiatric University Clinic of Vienna*; Kurt Lenz, MD, *Intensive Care Unit, Medical University of Vienna*; Otto Presslich, MD, *Intensive Care Unit, Psychiatric University Clinic of Vienna*; Josef Grünberger, PhD, *Psychodiagnostic Unit, Psychiatric University Clinic of Vienna*

*Correspondence

British Journal of Psychiatry (1990), **157**, 752–754

To Weigh or Not To Weigh?

Frequency of Weighing and Rate of Weight Gain in Patients with Anorexia Nervosa

S. W. TOUYZ, W. LENNERTS, R. J. FREEMAN and P. J. V. BEUMONT

The present study compares the rate of weight gain during refeeding in 15 anorectic patients who were weighed daily with that of 15 who were weighed three times per week. There was no significant difference between the two groups.

There is now a general consensus among clinicians that weight restoration must occur if psychological treatment is to be effective in the management of patients with anorexia nervosa. Behaviour-modification techniques have become an integral component of most refeeding programmes as they are easily mastered by paramedical staff and have been shown to facilitate weight gain (Garfinkel & Garner, 1982; Garner, 1985; Touyz *et al*, 1984, 1987).

Informational feedback has been reported to be an important component for successful treatment (Garfinkel & Garner, 1982; Wilson *et al*, 1985). Because of this, some have recommended that patients be weighed each morning during refeeding (Maxman *et al*, 1974; Agras & Werne, 1978) whereas others have warned of the iatrogenic dangers of intensifying the patient's preoccupation with body weight (Pardee, 1941). To circumvent this, it has been suggested that patients be weighed less frequently (Day, 1974) or that the frequency of weighing be negotiated with individual patients (Garfinkel & Garner, 1982).

To our knowledge, there has been no systematic study as yet which has compared the rate of weight gain during refeeding in patients who are weighed daily with those who are weighed less frequently while participating in a hospital programme under the care of the same consultant.

Method

Our sample consisted of 30 in-patients with anorexia nervosa, as defined by DSM-III-R (American Psychiatric Association, 1987). They were consecutive admissions to a specialised eating-disorders programme at a large teaching hospital and were all under the consultant care of one of the authors. The demographic and clinical characteristics of the patients are presented in Table I. They were divided into two cohorts. The first 15 patients were weighed daily whereas the next 15 patients were only weighed three times per week.

Patients were refed using a lenient flexible behavioural programme (Touyz *et al*, 1987). Such a programme is seen as more acceptable by the majority of patients, requires less nursing time, and is more economical as it allows more time for staff to engage in individual and group psychotherapy. In the present study, patients were told that they had to gain 1.5 kg a week at the time of their admission to the unit. Provided they complied with this requirement, they were free to move around the unit or attend outings to a nearby shopping complex. Furthermore, they were permitted to leave the unit on weekends for a few hours with relatives or friends. They understood that if they failed to achieve the weekly target of weight gain they would be