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A measure of withdrawal

Alcohol Withdrawal in the Elderly

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ABSTRACT. The phenomenon of alcohol withdrawal has seldom been studied in subgroups of patients in withdrawal. We developed a rating scale for measuring alcohol withdrawal that we found to be reliable and valid. The scale, when applied to young (ages 21-33, $N=24$) and elderly (ages 58-77, $N=26$) groups of patients in alcohol withdrawal, indicated that the elderly group initially had a more severe withdrawal for which they received higher doses of chlordiazepoxide. (*J. Stud. Alcohol* **50:** 414–421, 1989)

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THE SYMPTOMS of the alcohol withdrawal syndrome have been known since antiquity but were not systematically assessed until the descriptive studies by Victor and Adams (1953) and the experimental work of Isbell et al. (1955). Since then, it has been clearly established that for most patients the alcohol withdrawal syndrome is a self-limited condition (Whitfield et al., 1978) with mild to moderate symptoms. However, a certain percentage (1-15%) of patients, depending on the population studied, goes on to develop seizures and a more serious condition, termed major withdrawal or delirium tremens (DTs). Although progression from mild to severe withdrawal is probably postively related to the presence of intercurrent illness, prolonged drinking and the intake of large quantities of alcohol, the prediction of which patients will develop delirium tremens is uncertain. Hence, when it was clearly shown that benzodiazepines would prevent progression of the alcohol withdrawal syndrome to seizures and delirium tremens (Kaim et al., 1969), pharmacotherapy became standard treatment in alcohol withdrawal although it was known that most patients did not need it.

In addition to the uncertainty of which patients need pharmacotherapy, there remain a number of other important unanswered questions relating to differences in the clinical courses, responses to treatments and dosage requirements of various alcohol withdrawal subgroups including, among others, the medically and psychiatrically ill, women and the aged. Most studies have been conducted on medically and psychiatrically healthy, middle-aged males, and/or have not attempted to divide the groups of alcohol withdrawal patients into subgroups.

A major reason for these gaps in knowledge is the absence of agreed criteria for assessing mild and moderate forms of the syndrome. Although various symptoms of minor withdrawal have been described, the specific symptoms to monitor and the means of assessing these symptoms have not been standardized and, hence, studies cannot be easily compared to one another. In a recent review of all randomized controlled studies of the use of medication in alcohol withdrawal, Moskowitz et al. (1983) found few of 29 studies adequate in design or execution. They cited as one among many deficiencies in these studies that "the end points used were so subjective and poorly defined that, had sufficient data been given, it still might have been difficult to combine results." In addition, the scales used to rate withdrawal symptoms were seldom validated or tested for reliability.

Gross et al. attempted to develop a standardized evaluation instrument for the alcohol withdrawal syndrome (1971a,b; 1972a,b 1973a,b; 1974). However, their specific method did not gain wide acceptance, perhaps partly because it was lengthy, cumbersome and not validated. More recently, the Addiction Research Foundation in Toronto has modified the original instrument of Gross et al. (Shaw et al., 1981) and applied it in several studies relating to alcohol withdrawal (Naranjo et al., 1983; Sellers et al., 1983). This 15-item scale, termed the Clinical Institute Withdrawal Assessment for Alcohol (CIWA-A), was validated against an independently determined global rating scale of severity of withdrawal and its reliability judged adequate when tested by having raters simultaneously view

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videotapes of patients in withdrawal. This instrument needs to be tested in larger and more diverse groups of patients, and its reliability assessed in an actual clinical situation before its ultimate utility is determined. Sellers et al. (1983) noted, in discussing the use of the scale in controlled trials of alcohol withdrawal, that "in the interest of trying to standardize methodology, we recommend this instrument (CIWA-A) for all controlled trials." Such a standardized methodology is clearly of importance if progress is to be made in studying the course and treatment of the alcohol withdrawal syndrome.

Our group began to work on a modification of the Gross scale shortly before the Toronto group published their scale. Our scale is similar in length and content to the CIWA-A, containing 18 items rather than 15. Each item is measured on a 0-3 scale, rather than a mixture of 0-2 to 0-7 scales as occurs in the CIWA-A. We also developed our scale starting from the premise (Moskowitz et al., 1983) that "no future alcohol withdrawal randomized clinical trials should use placebo, and benzodiazepines should be the standard measurement against which all others are compared." Moskowitz et al. reached this conclusion because their review of all randomized controlled studies of medication in treating the alcohol withdrawal syndrome had indicated that the only certainty was that benzodiazepines were superior to placebo. We decided, therefore, that any scale developed should contain symptoms of both alcohol withdrawal and sedative-hypnotic intoxication. Such a scale theoretically should measure a patient's condition early in withdrawal when symptoms of alcohol intoxication and withdrawal might be present, as well as late withdrawal when symptoms of benzodiazepine intoxication might be equal to or greater than alcohol withdrawal symptoms. An initial attempt to separate symptoms of withdrawal and intoxication was abandoned as many of the symptoms are common to both intoxication and withdrawal, such as irritability, nausea, vomiting, anorexia, tachycardia and nystagmus.

The purposes of this study were (1) to establish the scale's reliability and validity, and (2) to determine if the scale was able to detect differences in the withdrawal syndrome between older and younger patients being treated for alcohol withdrawal.

Method

Patient selection

This study was conducted on the 30-bed inpatient alcohol treatment unit of the Kansas City Veteran's Administration Medical Center. Patients admitted to this service underwent detoxication if necessary prior to entering a 28-day inpatient rehabilitation program. Assessment of withdrawal symptoms after admission was done once every 8 hours over a 5-day period using the instrument described below. From September 6, 1983 to December 1, 1983, 136 patients were admitted to the alcohol unit (exclusive of transfers from other units) who admitted to drinking in the week prior to admission. Eleven patients left against medical advice before the end of the 5-day rating period, 12 were discharged regularly in less than 5 days, 5 were transferred to other inpatient services before the 5 days ended and 5 patients had inadequate data sets, leaving 103 patients in the study.

Scale development

Initially, clinical features associated with alcohol withdrawal and intoxication were extracted from the literature (Gross et al., 1973a, 1974; Isbell et al., 1955; Klett et al., 1971; Mello and Mendelson, 1970; Mendelson, 1964; Sellers and Kalant, 1976; Victor and Adams, 1953). After discussion among this study's authors, those items that could be operationally defined and quantitated were chosen for inclusion in the scale. Eighteen items were thus selected and each placed on a scale from 0 to 3, with each scale division clearly defined (Table 1). Convulsions were rated as either not present (equals 0) or present (equals 3). Of the scale's 18 items, the first 14 listed were chosen because they related to withdrawal and the last 4 because they were related to intoxication. However, it was realized there was marked overlap on a large number of the items as indicated above.

After patient consent, the scale was applied by three raters simultaneously to each of 20 patients admitted to the alcohol unit for detoxication and the scale's interrater reliability was determined from these evaluations.

Patient assessment

All patients admitted to the alcohol inpatient unit through the alcohol outpatient clinic were first interviewed by an experienced alcohol counselor using a locally developed questionnaire to obtain basic demographic information and an alcohol history, including time from last drink, amount of alcohol consumed in the prior 24 hours, alcohol consumed in the prior 30 days, number of years of problem drinking, number of prior episodes of treatment for alcoholism, history of delirium tremens and prior utilization of disulfiram and Alcoholics Anonymous. In addition, the counselor completed a global assessment of each pa-

TABLE 1. Alcohol Withdrawal and Intoxication Scale (AWIS) items

Symptom	0 Absent	1	2	3 Present & severe
1. Eating disturbance	Ate all food	More than ½ meal	Less than ½ meal	Nothing eaten
2. Nausea/vomiting	None	Nausea, no vomiting	Nausea & vomiting ≤ 2 episodes	Nausea & vomiting > 2 episodes
3. Tremors	None	Not visible but felt by examiner	With arms extended	Present when arms are not extended
4. Sweating	None	Barely visible	3-4 beads of sweat obviously visible	Heavy sweating
5. Sleep	Slept all night	Patient awake ≤ ½ night	Patient awake > ½ night	Completely sleepless
6. Nightmares[a]	None	Unpleasant dreams not awakening patient	Frightening dreams awakening patient but is able to return to sleep	Frightening dreams, unable to return to sleep
7. Disorientation	Oriented	Disoriented to month	Disoriented to month & season	Disoriented to place
8. Hallucinations[a]	None	Occasional hallucinations	Frequent hallucinations to which patient doesn't respond	Frequent hallucinations to which patient responds
9. Delusions[a]	None	Present with insight	Present with partial insight	Present with no insight
10. Quality of contact	Alert	Drifts off & contact readily established	Drifts off & makes contact with difficulty	No contact
11. Agitation	None	Fidgets in chair or bed without attempt to get up	Fidgets & arises from chair or bed	Paces, unable to sit or lie down
12. Temperature[a]	≤ 99.5	99.6–100.4	100.5–101.9	≥ 102
13. Pulse	≤ 80	81–100	101–119	≥ 120
14. Convulsions[a,b]	Absent			Present
15. Drowsiness	Alert	Drowsy but awake	Drifts on & off to sleep	Sleeps all the time
16. Dysarthria	Speech clear	Occasional words slurred	Many words slurred	Speech unintelligible
17. Ataxia	Walks normally	Walks with some difficulty	Walks with much difficulty	Unable to walk
18. Nystagmus	Absent	Few beats on horizontal gaze	Many beats on horizontal gaze	Present on horizontal & vertical gaze

[a] Items that did not change significantly in the 5-day observation period.
[b] No convulsions occurred.

tient's degree of alcohol withdrawal on a 0-3 scale (0 = no withdrawal; 1 = mild withdrawal; 2 = moderate withdrawal; 3 = severe withdrawal) and degree of intoxication on a 0-3 scale (0 = not intoxicated; 1 = mild intoxication; 2 = moderate intoxication; 3 = severe intoxication).

This study relates to only those patients who admitted drinking in the week prior to admission.

Immediately upon admission, after patient consent was obtained, the patient was evaluated with the 18-item alcohol withdrawal and intoxication scale (AWIS). The evaluation was repeated each nursing shift (every 8 hours) for 5 days by nursing staff who had been trained in the use of the AWIS. The nursing staff did not have access to the counsellor's global assessments of intoxication and withdrawal. Independently on admission, the patient was evaluated by a psychiatric and/or medical resident and, if necessary, placed on an alcohol withdrawal medication regimen using chlordiazepoxide, the need for which was evaluated daily. The residents did not change their usual procedure for treating withdrawal for this study. The procedure was to give sufficient chlordiazepoxide to control withdrawal symptoms without significantly intoxicating the patient. Although the residents were told that chlordiazepoxide was the medication in use on the alcohol service for alcohol withdrawal, specific doses for treating alcohol withdrawal were not mandated.

General guidelines for dosing were taught to the residents with the emphasis placed on titrating the dose of chlordiazepoxide to the symptoms of withdrawal and intoxication. The physician prescribing the chlordiazepoxide did not have access to the AWIS or global ratings and, hence, judged medication needs independently of these scales.

Data analysis

Interrater reliability was assessed by determining the percentage agreement among raters for each scale item. Data related to the AWIS, drinking history, chlordiazepoxide doses and age were analyzed by computer utilizing SPSS programs for multiple correlations, ANOVA and covariance where appropriate.

Two of the items, sleep and nightmares, were rated during only one of the three periods in the 24-hour day and, hence, for evaluation of the AWIS score by 24-hour periods, the ratings for these two items during the night 8-hour period were multiplied by 3. Scores on other AWIS items were summed for the three 8-hour periods per day to give day scores for each of the 5 days.

Results

Patient characteristics shown in Table 2 indicate the patients as a group were alcohol dependent for many years, with heavy drinking prior to admission and with a substantial minority having a prior history of delirium tremens.

Among the three raters who rated 20 individual patients, the range of agreement for individual AWIS scale items was 77-100%. (The table of agreement for each AWIS item is available upon request from the first author.)

Validity of the AWIS scale was assessed by comparing the global withdrawal and intoxication ratings done on admission by the alcohol counselor with the AWIS scores for the first 24 hours done by nursing staff (Table 3). As shown, the relationship of the AWIS (first 24 hours) to the global rating of alcohol withdrawal indicates that the AWIS measures an independently determined graded clinical entity. The correlation of the global rating of alcohol withdrawal and the AWIS (first 24 hours) was .51 ($p < .001$). As shown on Table 3, the relationship of the AWIS to the global rating of alcohol intoxication is more equivocal, as reflected also in the lower correlation of these measures ($r = .3$, $p < .001$).

Another indication of the validity of the AWIS is the correlation between the amount of chlordiazepoxide administered and the AWIS score. The chlordiazepoxide was prescribed daily by physicians on the basis of their assessment of each patient's clinical status and without knowledge of the global ratings or the AWIS score. Presumably, the dosage of chlordiazepoxide was based

TABLE 2. Patient characteristics

	Total group ($N = 103$)	Younger group (21-33, $N = 24$)	Older group (55-77, $N = 26$)
Age (years)	45.0 ± 13.9	28.7 ± 3.6	64.5 ± 4.8
Marital status (%)			
Single	15	25	12
Married	27	25	46
Divorced, Separated	55	51	35
Widowed	3	0	8
Time from last drink to admission (median, hours)	12	15	8.0
Ethanol consumed 24 hours prior to admission (grams absolute ethanol)	202 ± 179	237 ± 211	207 ± 159
Ethanol consumed 30 days prior to admission (grams absolute ethanol)[a]	9,236 ± 4,967	10,999 ± 4,092	7,071 ± 4,103
Number years problem drinking[b]	16.5 ± 12.1	8.9 ± 5.2	26 ± 15.8
Number prior treatments[c]	1.3 ± 1.3	.92 ± 1.28	1.7 ± 1.2
History DTs (%)	21	12.5	30.8
Prior use disulfiram (%)	51	50	42.3
Prior AA experience (%)	68	54.2	61.5

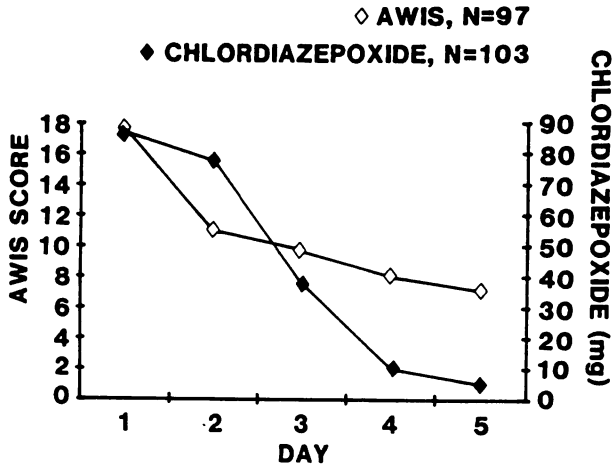
[a]Younger vs older, $t = 3.39$, 48 df, $p < .001$.
[b]Younger vs older, $t = 5.05$, 48 df, $p < .001$.
[c]Younger vs older, $t = 2.30$, 48 df, $p < .026$.

TABLE 3. Comparison AWIS (first 24 hours) with global assessments of alcohol withdrawal and intoxication

	Global alcohol withdrawal scale			
	0	1	2	3
AWIS (X)	13.2	17.9	33.5	29.5
n	45	40	10	2
	F = 14.6, 3/96 df, $p<.001$			
	Global alcohol intoxication score			
	0	1	2	3
AWIS (X)	14.8	23.1	23.0	21.5
n	64	24	7	2
	F = 4.56, 3/96 df, $p<.005$			

on an assessment of the patient's degree of withdrawal (with more chlordiazepoxide for more severe withdrawal) and chlordiazepoxide intoxication (with less chlordiazepoxide for more severe intoxication). Because the majority of items on the AWIS relate to withdrawal, a positive correlation between the AWIS score for any given day and the amount of chlordiazepoxide prescribed on that day would be expected. Such a positive correlation existed for each of the 5 days: Pearson product moment r, Day 1 = .71 ($p<.0001$); Day 2 = .32 ($p<.001$); Day 3 = .29 ($p<.002$); Day 4 = .33 ($p<.001$); Day 5 = .23 ($p<.014$).

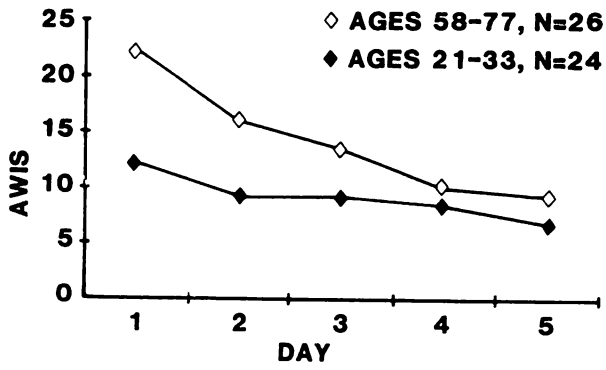
As shown in Figure 1, if declining chlordiazepoxide doses are taken as an indication of improvement in clinical status, the AWIS scores across the 5-day period track the improvement in the clinical course. It should be noted that this group of patients was in mild to moderate withdrawal, as none sustained a seizure or developed delirium tremens. Whether this was due to prompt treatment or a less severe withdrawal syndrome cannot be determined. Analysis of variance across each of the 5 days for each individual item indicated that 5 of the 18 items did not track the clinical course in this group of patients (Table 1; in addition, the following tables are available from the first author on request: mean ± SD of scores for each AWIS item for each day; percentage of individuals receiving ratings of 0, 1, 2 or 3 points for each item in the first 24-hour rating period; and frequency distribution of total AWIS score in the first 24-hour rating period). We would not suggest that these items be eliminated from the scale as they have been clinically related to alcohol



	AWIS	S.D.	CHLOR. (mg)	S.D.
DAY 1	17.6	11.0	86.7	105.2
DAY 2	11.0	9.0	77.6	166.0
DAY 3	9.7	8.0	38.1	116.4
DAY 4	8.0	6.2	10.0	27.2
DAY 5	7.2	4.8	4.5	30.0

AWIS x TIME F(4,92)=38.7,p<.000
CHLORDIAZEPOXIDE x TIME F(4,98)=10.3,p<.000

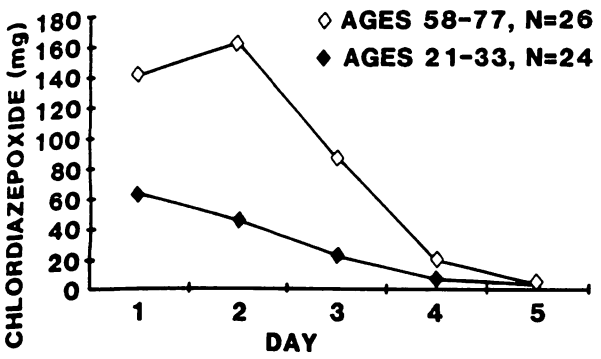
FIGURE 1. Relationship of AWIS and chlordiazepoxide dose



	AGES 21-33,(N=24) AWIS	S.D.	AGES 58-77,(N=26) AWIS	S.D.
DAY 1	12.2	8.2	22.3	13.4
DAY 2	9.3	8.7	16.0	12.4
DAY 3	9.2	7.9	13.6	11.5
DAY 4	8.4	6.4	10.1	6.4
DAY 5	6.7	5.1	9.2	6.7

TIME: F(4,46)=32.1,p<.000
AGE: F(1,49)=25.2,p<.000
AGE x TIME: F(4,46),p<.000

FIGURE 2. Relationship of age and AWIS score



	AGES 21-33(N=24) CHLOR. (mg)	S.D.	AGES 58-77(N=26) CHLOR. (mg)	S.D.
DAY 1	62.5	94.7	140.4	120.0
DAY 2	43.8	81.2	160.5	289.0
DAY 3	20.8	44.0	85.5	214.0
DAY 4	5.2	20.8	18.3	36.4
DAY 5	1.0	5.1	1.9	6.8

TIME: F(4,46)=10.5,p <.000
AGE: F(1,49)=25.2,p<.000
AGE x TIME: F(4,46)=1.89,NS

FIGURE 3. Relationship of age and chlordiazepoxide dose

withdrawal and may track clinical status over time in more severe withdrawal states. However, perhaps a shorter version of the scale would suffice for assessing mild to moderate withdrawal. A similar conclusion was reached by Naranjo and Sellers (1986) when they ascertained that 9 of the CIWA-A scale's 15 items correlated with the whole scale with an r of .95.

A major purpose of our study was to determine if elderly patients had a different clinical course, when treated with standard pharmacotherapy, than younger patients. We divided our patient sample approximately into quarters and considered the oldest (ages 58 to 77, $N = 26$) and youngest (ages 21 to 33, $N = 24$) quarters. The characteristics of these two groups are shown on Table 2 and indicate that the older group has significantly more years of problem drinking, received more prior treatments for alcoholism and drank less in 30 days prior to admission, but differ on no other measure. As indicated in Figures 2 and 3, despite wide variability, especially in chlordiazepoxide doses given, there were significant differences in the AWIS scores and amount of chlordiazepoxide prescribed over the 5-day period between the older and younger group, the older group having a more severe clinical syndrome and receiving more chlordiazepoxide. The high degree of variability in the chlordiazepoxide dose given (ranging from none to 400mg per day) may have been related to differences in withdrawal symptoms perceived by the residents prescribing the chlordiazepoxide, as well as, perhaps, differences in the prescribing habits of the residents.

The significant interaction of time and age in relation to the AWIS score (Figure 2) indicates a rapid improvement of symptoms during the withdrawal period for the elderly group. However, the withdrawal period is prolonged in this group compared to the younger patients because the elderly group has a more severe withdrawal initially. This initial severe withdrawal no doubt accounts for the fact that the elderly group receives larger doses of chlordiazepoxide initially and for the 5-day period than the younger group.

Covariate analysis of the first 24-hour AWIS scores indicated that the higher AWIS scores in the elderly group were not related to the amount of ethanol consumed over the prior 24 hours ($F = .77$, 1/46 df), amount consumed in the past 30 days ($F = .01$, 1/46 df) or number of past treatments for alcoholism ($F = .68$, 1/46 df). The number of problem drinking years contributed to the differences ($F = 6.74$, 1/46 df, $p = .013$), but age remained a significant factor ($F = 5.79$, 1/46 df, $p < .02$) after covarying for problem drinking years.

It should be noted that there was a lack of correlation between the AWIS scores on Day 1 and the amount of alcohol consumed in the past 24 hours for both the younger ($r = .19$) and the older ($r = .20$) groups. In addition, there was a lack of correlation between the AWIS scores on Day 1 and the amount of alcohol consumed in the past 30 days for the younger group ($r = -.07$) but there was a significant correlation for these values for the older group ($r = .45$, $p < .01$). There are several possible explanations for these results. Alcoholics' reports of the amount they drink may be inprecise, especially in relation to when they drank. In addition, drinking in the past 24 hours and 30 days may not be the best periods to assess for correlations with withdrawal symptoms. Many alcoholics may have discontinued or decreased their alcohol intake between 24 and 48 hours prior to admission. Thus, the proper correlation may be between withdrawal symptoms and the amount of alcohol consumed in the 3 to 5 days prior to admission. In addition, many alcoholics may have been drinking more heavily 2 to 4 weeks before admission rather than the 2 weeks prior to admission. Such alcoholics would report large amounts of alcohol consumed in the past 30 days but would not have been drinking heavily in the 2 weeks prior to admission, which would be the

critical time for heavy drinking to lead to withdrawal symptoms. In our group of older patients, there was a high correlation between drinking in the past 30 days and the AWIS scores and, thus, for this particular group of patients, reported drinking in the past 30 days does relate strongly to withdrawal symptoms. It should be noted that despite this correlation and the more severe withdrawal experienced by the elderly group, they drank less in the 30 days prior to admission than the younger group (Table 2).

Of interest is that the amount of chlordiazepoxide prescribed on each of the 5 days correlated with the AWIS scores for that day for the younger group (Day 1, $r = .78$, $p < .0001$; Day 2, $r = .66$, $p < .001$; Day 3, $r = .55$, $p < .004$; Day 4, $r = .51$, $p < .008$; Day 5, $r = .71$, $p < .0001$), whereas for the older group the AWIS scores correlated with the amount of chlordiazepoxide prescribed only for Day 1 ($r = .74$, $p < .0001$) but not for Days 2-5. This may have been due to the fact that in elderly patients, some of the AWIS symptoms (e.g., tremors, quality of contact) may represent symptoms due to age as well as withdrawal and, hence, not respond well to chlordiazepoxide.

As noted above, the elderly group did receive more total chlordiazepoxide for the 5-day period than the younger group. The implication of this finding is that elderly patients have initially a more severe alcohol withdrawal symptom picture than younger patients for which they need and receive higher total doses of chlordiazepoxide. It should be emphasized that in this study, although the elderly have a more severe alcohol withdrawal syndrome complex than younger patients, the symptoms are still relatively mild. However, the more severe withdrawal and higher total chlordiazepoxide dose may make them amenable to alcohol rehabilitation at a somewhat later time period than younger patients.

Discussion

Many studies of alcohol withdrawal have concentrated on the ability of various drug therapies to prevent delirium tremens and convulsions. Studies that have assessed the amelioration of milder symptoms of alcohol withdrawal by medication have generally not utilized reliable and/or validated instruments (Moskowitz et al., 1983). In addition, few studies have considered that differences in intensity and time course of symptoms may exist among different populations of alcoholics. The assessment of alcohol withdrawal is further clouded by the understandable reluctance to use placebo controls in medication studies of alcohol withdrawal since benzodiazepines have proven therapeutic efficacy in preventing alcohol withdrawal seizures and delirium. However, rating instruments do not take into account the possibility that the benzodiazepines may be contributing symptoms to patients in alcohol withdrawal, thus affecting their clinical course.

This study has attempted to expand on the work of Gross et al. and the Toronto group in establishing a valid, reliable instrument for assessing patients in alcohol withdrawal who are undergoing treatment with benzodiazepines. In our patient population of veterans entering an inpatient alcohol unit, no one developed severe symptoms of withdrawal (delirium tremens or convulsions). Although it is not possible to determine if this was due to prompt and effective treatment or to the fact that our patients were not suffering from severe withdrawal, it is worth noting that our patients were long-standing alcoholics who were drinking heavily prior to treatment. The instrument described, although utilized with patients in apparent moderate withdrawal, was found to be valid, reliable and sensitive enough to follow the course of our patients' clinical status. Although originally we hoped to be able to separate elements of intoxication from those of withdrawal, our research design did not allow us to do so. However, an analysis of those items originally thought to represent intoxication (items 15-18 on Table 1) tracked clinical improvement across 5 days and, except for item 15, correlated with the total AWIS scale for Days 1 through 5. (Item 15, drowsiness, correlated on Days 1 and 2 but not Days 3 through 5.) Therefore, the entire AWIS scale can be conceived of as measuring the course of alcohol withdrawal modified by chlordiazepoxide. Additional studies will be needed to separate those elements of the scale measuring withdrawal from those measuring chlordiazepoxide effects.

The AWIS was able to suggest that elderly patients, as a group, have a more severe withdrawal than younger patients for which they receive higher doses of chlordiazepoxide. It is possible that for older patients, this more severe withdrawal and higher doses of chlordiazepoxide may delay their ability to enter rapidly into a treatment program, although our study did not directly assess this speculation. This hypothesis is given credence, however, by Shader's finding that elderly patients metabolize chlordiazepoxide more slowly than younger patients (Shader et al., 1977).

The reporting of this scale and its findings should be considered preliminary. It is not clear if the scale is effective in assessing a wide spectrum of patients in alcohol withdrawal who are receiving chlordiazepoxide, in assessing patients on nonbenzodiazepine medication or in assessing various subgroups in alcohol withdrawal, such as adolescents, women, those with other psychiatric and mental disorders, etc. Hopefully, future

studies of alcohol withdrawal will begin to address the assessment of the withdrawal syndrome in various populations and will do so with attention to the accurate and meaningful measurement of the components of this important clinical entity.

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