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## Reversal of Abnormal Dexamethasone Suppression Test in Alcoholics Abstinent for Four Weeks

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*Fourteen of 64 alcoholic inpatients (22%) showed a nonsuppression postdexamethasone response when tested between the second and fifth days of admission. No association with alterations of hepatic enzymes (GGT, SGOT, SGPT) was observed. At retest (in the fourth week of abstinence), no abnormal response to the Dexamethasone Suppression Test (DST) was detected. The nonsuppressor alcoholics did not meet the criteria for major depression according to the Research Diagnostic Criteria (RDC). The data indicate a lack of specificity of the DST for the diagnosis of depression in alcoholics during the first days of withdrawal.*

### Introduction

The diagnosis of major depressive disorder in alcoholics has been the subject of different studies, with controversial results: reported rates vary from 8.6% to 66%, according to different authors and criteria (Keeler et al. 1979). In recent years, the Dexamethasone Suppression Test (DST) has been used as an adjunctive laboratory procedure for the diagnosis of depression, according to the procedure standardized by Carroll et al. (1981). DST for detection of depression in alcoholics has been studied recently in experiments variously designed in relation to dose of dexamethasone employed, days of alcohol abstinence, patient selection (e.g., with or without hepatic disease), and in the analysis of depressive symptoms (Oxenkrug 1978; Brown et al. 1979; Swartz and Dunner 1982; Kroll et al. 1983; Newsom and Murray 1983; Abou-Saleh et al. 1984; Dackis et al. 1984; Targum et al. 1984). According to some studies, a considerable percentage of alcoholics did not suppress plasma cortisol (positive DST) (Oxenkrug 1978; Swartz and Dunner 1982; Kroll et al. 1983); conversely, other authors described a normal suppression of cortisol response (negative DST) in alcoholics (Brown et al. 1979; De la Fuente 1979; Brown and Shuey 1980).

In a study in which 75 patients were tested, Newsom and Murray (1983) reported a positive DST response for 17%. The period of alcohol abstinence prior to the test ranged

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from 3 to 50 days; at retest, 4 weeks later, all patients presented a normal response to dexamethasone. Similarly, Dackis et al. (1984) submitted 15 patients with alcohol withdrawal symptoms to the DST during the first and fourth weeks of hospital admission. At the first test, 3 out of the 15 alcoholics (20%) were nonsuppressors. During the fourth week of abstinence, these 15 patients and another 17 alcoholics who did not have the alcohol withdrawal syndrome at admission all had their DST response evaluated. None of them had an abnormal DST. Patients with hepatic disease and depression were excluded from the sample. Abou-Saleh et al. (1984) evaluated 72 patients between the third and sixth week of abstinence and reported a significantly larger number of nonsuppressors among the alcoholics (28%) when compared to a normal control group (11%). These authors propose that the alteration of the DST in their study was associated, not with depression, but with hepatic alterations. Conversely, Kroll et al. (1983), using a sample of patients after 3 weeks of abstinence, did not detect differences related to hepatic function between suppressors and nonsuppressors; they also reported that the two groups did not differ either in age nor alcoholic chronicity. Among the seven patients who presented a positive DST result in their sample, three were considered to be depressed. In a recent paper, Targum et al. (1984) reported a lack of correlation between positive DST and hepatic enzyme alterations in alcoholics; they also reported that no correlation was found with depression.

Within this framework, the present study was performed in order to provide further data on the response to dexamethasone during the first and fourth weeks of abstinence, its association with alterations of hepatic enzymes, and the diagnosis of major depressive disorder.

## Methods

A sample of 64 patients, consisting of 61 men and 3 women (ages ranging from 27 to 63 years with a mean of 43) in an inpatient program for alcoholics in a psychiatric hospital located in São Paulo City, was studied. All met Research Diagnostic Criteria (RDC) for alcoholism (Spitzer et al. 1977). As a rule, patients who attend this service are of low socioeconomic level. Exclusion criteria included serious acute physical illness, other drug abuse, and recent therapeutic use of phenytoin sodium, barbiturates, or corticosteroids.

Between the second and fifth days of admission, as in the study by Carroll et al. (1981), the 64 patients received 1 mg of oral dexamethasone at 11:00 PM. Blood samples were drawn at 4:00 PM the next day. Cortisol was measured by radioimmunoassay, with intra- and interassay coefficients of variation of 12.5% and 8.9%, respectively. An abnormal DST was defined as a postdexamethasone serum cortisol level greater than 5  $\mu\text{g}/\text{dl}$ , as outlined by Carroll et al. (1981). Serum gamma glutamyl transferase (GGT), glutamate oxaloacetate transferase (SGOT), and glutamate pyruvate transferase (SGPT) were also evaluated. The upper limits of normality considered were 28 IU/liter, 18 IU/liter, and 22 IU/liter, respectively. The patients who showed nonsuppression underwent another DST after the fourth week of hospitalization and were evaluated for GGT, SGOT, and SGPT again. At this occasion, they were interviewed by two psychiatrists for diagnosis according to the RDC for major depressive disorder. Subgroup differentiations were avoided.

The severity of the alcohol dependence syndrome was evaluated through the Short Alcohol Dependence Data (SADD) questionnaire, developed by Raistrick et al. (1983) and adapted for our conditions by Jorge and Masur (in press). All patients, following the

Table 1. Characteristics of Cortisol Suppressor and Nonsuppressor Alcoholics at the First Week of Alcohol Abstinence

	Positive DST (n = 14)	Negative DST (n = 50)
Cortisol ( $\mu\text{g/dl}$ ) <sup>a</sup> (mean $\pm$ SD)	13.0 $\pm$ 5.6	1.4 $\pm$ 1.3
Age (years) (mean $\pm$ SD)	42 $\pm$ 10	43 $\pm$ 10
Severity of alcohol dependence syndrome		
SADD scores		
<9	0%	11%
10-19	14%	17%
$\geq$ 20	86%	72%
SADD median	29	31
Percent of abnormal values		
SGOT	43%	59%
SGPT	50%	40%
GGT	78%	54%

<sup>a</sup>4:00 PM postdexamethasone measurements.

routine of the hospital, received a daily oral 50-100 mg dose of chlordiazepoxide throughout the hospitalization period.

## Results

Of the 64 alcoholics studied, 14 (22%) showed positive DST results when evaluated between the second and fifth days of hospitalization. They did not differ from the group with negative DST either in age (Student's *t*-test,  $t = 0.07$ ;  $p > 0.05$ ) or in the severity of the alcohol dependence syndrome as tested by the Mann-Whitney test ( $z = 1.15$  for a  $U = 256$ ) (Table 1). The postdexamethasone plasma cortisol concentrations of the suppressors and nonsuppressors are also shown in Table 1. Abnormal values of at least one of the three enzymes evaluated (SGPT, SGOT, and GGT) were observed in 75% of the alcoholic sample in the first test. No association between the response to dexamethasone and the alterations in those enzymes was detected ( $\chi^2 = 1.03$ ;  $p > 0.05$ ).

Of the initial 14 nonsuppressors, 9 were again submitted to the DST during the fourth week of abstinence. At this time, the nine alcoholics presented a normal suppression response (Figure 1). The other five patients were no longer in the hospital at this time. It is noteworthy that the normalization of the DST was not paralleled by the normalization of the hepatic enzymes, as seven of the nine nonsuppressors retested presented abnormal values for at least one enzyme in both tests.

None of the alcoholics with positive DST values fulfilled the criteria for major depression disorder according to the RDC.

## Discussion

In the present study, 22% of an alcoholic sample presented a positive DST result during the first week of hospital admission. This value is similar to that obtained by Dackis et al. (1984) and Targum et al. (1984), who reported positive tests of 20% and 19%, respectively, during the first week of alcohol abstinence.

Our data indicate that altered DST results are observed in alcoholics with or without

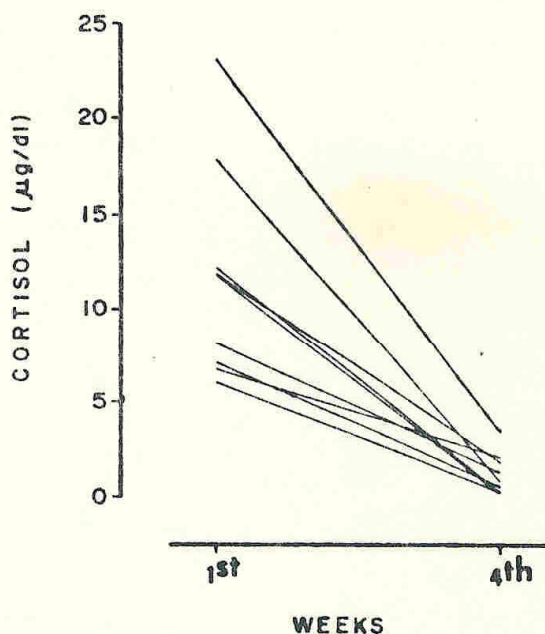


Figure 1. Postdexamethasone cortisol level of nine alcoholics evaluated at the first and fourth weeks of abstinence.

altered hepatic enzyme values, which is in accordance with the findings of Newsom and Murray (1983), Kroll et al. (1983), and Targum et al. (1984). Nevertheless, they disagree with the data reported by Swartz and Dunner (1983) and Abou-Saleh et al. (1983), who observed an association between positive DST and abnormal hepatic enzyme values. In support of a lack of correlation between the response to dexamethasone and alterations in SGOT, SGPT, and GGT, our data show that the normalization of DST did not imply a return to normality of the enzyme values.

The utility of the DST as an aid to the diagnosis of depression among alcoholics during the stage of acute alcohol withdrawal seems to be limited. After a few weeks of abstinence, as reported by Dackis et al. (1984) and confirmed in the present study, a normalization of the response to dexamethasone is observed. Furthermore, in our work, the nonsuppressors did not fulfill the criteria for major depression, which also agrees with the observations of Newsom and Murray (1983), Swartz and Dunner (1983), Abou-Saleh et al. (1984), and Targum et al. (1984).

As reviewed by Kroll et al. (1983) and Targum et al. (1984), different contingencies, not related to depression, may account for the finding of positive DST results among alcoholics, e.g., the influence of alcohol on the limbic-hypothalamic-pituitary-adrenal function, recent loss of weight, and a possibly increased rate of dexamethasone metabolism by action of the hepatic microsomal enzyme system.

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