Alcohol & Alcoholism Vol. 35, No. 6, pp. 625–627, 2000

A MEASURE OF THE INTENSITY OF RESPONSE TO ALCOHOL TO SCREEN FOR ALCOHOL USE DISORDERS IN PRIMARY CARE

JEAN-BERNARD DAEPPEN*, ULRIKA LANDRY, ALAIN PÉCOUD, HEDI DECREY and BERTRAND YERSIN

Department of Internal Medicine, Alcohol Unit, BH–10, CHUV–1011 Lausanne, Switzerland

(*Received* 2 *March* 2000; *in revised form* 12 *June* 2000; *accepted* 8 *July* 2000)

Abstract — Alcohol-dependent subjects tend to report lower level of response to alcohol (LR) in the years before the disorder developed, compared to control subjects. The Self-Rating of the Effects of alcohol (SRE) score is a quick and valid retrospective estimate of LR. This study examined the associations between alcohol abuse or dependence and early experience of alcohol as measured on retrospective SRE score (relating to the first five times alcohol was imbibed), and the presence of alcohol abuse or dependence, in patients attending primary care. Higher Early SRE score (i.e. greater early tolerance of alcohol) was obtained in patients with an alcohol-related diagnosis than in patients without those diagnoses. Using a cut-off of 2 on the Early SRE score, the Early SRE score could discriminate between patients with and without an alcohol diagnosis with moderate to high sensitivity (84%) and modest specificity (57%).

INTRODUCTION

A low level of response to alcohol (LR), i.e. greater tolerance, or more alcoholic beverage required to produce an effect, predicts a higher risk for alcohol dependence (Schuckit, 1994; Schuckit and Smith, 1996). A recent report indicates that the Self-Rating of the Effects of alcohol (SRE) score (see Appendix) is an alternative to a relatively costly and time consuming alcohol challenge to measure LR (Schuckit *et al*., 1997*a*). The SRE scores correlated with the results of a challenge with a 0.72 g/kg body weight dose of ethanol in 98 young men. It therefore has a potential use as a surrogate for determining a subgroup of individuals who might carry a low LR and subsequently elevated risk of alcoholism (Schuckit *et al*., 1997*b*). The SRE provides a retrospective estimate of LR by assessing the number of drinks needed to produce each of four potential effects, i.e. the recognition of 'any effect', the development of dizziness or slurred speech, a stumbling gait, or passing out.

Given the difficulties clinicians experience in identifying patients' susceptibility to alcohol use disorders, this study explores the association between SRE scores and alcohol-related diagnoses in a sample of primary care patients, and the potential of the SRE score to screen patients for alcohol abuse or dependence.

SUBJECTS AND METHODS

From February to April 1999, a consecutive sample of 332 patients consulting the Lausanne University outpatient primary care centre was evaluated in a single face-to-face interview assessing demographic, social, and professional information, a description of current and past alcohol use including DSM-IV criteria of alcohol abuse or dependence (American Psychiatric Association, 1994), and the SRE.

The SRE has four questions assessing retrospectively the subjective effect of drunkenness experienced during three separate time points: the first five times alcohol was imbibed, the period of heaviest drinking, and the most recent 3 months. In order to explore the relationship between alcohol use disorders and tolerance corresponding to early experiences with alcohol (the native tolerance), the analyses reported here focused on the SRE score for the first five experiences with alcohol (the Early SRE), which was computed by dividing the sum of the number of drinks recorded in the four possible cells of the first five experiences with alcohol by the number of cells endorsed. The Total SRE score reflects combined native and acquired tolerance to alcohol, computed by dividing the sum of the number of drinks recorded in the 12 possible cells of the SRE by the number of cells endorsed.

One drink was defined as the amount of alcohol contained in 12 ounces of beer, 4 ounces of wine, or a single shot of 80 proof beverage. DSM-IV diagnoses of alcohol abuse and dependence were assessed through questions extracted from the French-validated version of the Diagnostic Interview for Genetic Studies (DIGS) (A. Berney *et al*., unpublished study).

For the analyses reported here, the patients were divided into two groups based on their lifetime histories of alcohol abuse or dependence. Mean comparisons between groups on Total SRE score and demographic characteristics were made with Student's *t*-tests for continuous variables and with the χ^2-test for categorical variables. A logistic regression analysis was performed to determine if the SRE score independently predicted a history of alcohol abuse or dependence in the presence of demographic characteristics. Finally, the area under receiver operating characteristic (AUROC), illustrated by a ROC curve, was calculated to describe the sensitivity and specificity of the SRE to identify patients with alcohol abuse or dependence with various SRE cut-offs.

RESULTS

Of the 332 primary care patients evaluated, 53 were excluded because they never drank alcohol, and 35 were excluded because they could not recall the intensity of their response to alcohol and thus could not complete the SRE, thus leaving 244 individuals with complete data available for analyses. The mean (± SD) age was 42.5 ± 18.37 years, 57.8% were males, and 45.1% were employed when they were interviewed.

*Author to whom correspondence should be addressed.

For 66.4% of the participants Switzerland was the country of citizenship, whereas 18.5% originated from other Western European countries, 9.9% from Africa, and 5.2% reported other origins.

The mean Early SRE score for these 244 primary care patients was 3.1 ± 2.90 drinks, 56 (23.0%) of them endorsed criteria for a lifetime diagnosis of alcohol abuse, and 31 (12.7%) for alcohol dependence. Comparing the mean Early SRE scores of the 87 patients with alcohol abuse or dependence to the scores of the 157 subjects who never met diagnostic criteria indicated evidence of higher Early SRE score in patients with alcohol abuse or dependence (4.0 ± 3.60 vs 2.5 ± 2.27, respectively; $t = 3.53$, $P = 0.001$).

In order to verify that the finding of higher Early SRE score in patients with an alcohol-related diagnosis was not a reflection of demographic differences between alcoholics and non-alcoholics, the two groups were compared (results not reported) regarding age at interview, sex ratio, employment, and country of origin. Subjects with abuse or dependence were younger than those without alcohol-related diagnoses (37.1 ± 13.34 and 45.4 ± 20.08 respectively; $t = 3.85$, $P < 0.001$), and there was a larger proportion of men (79.3%) among subjects with alcohol abuse or dependence compared to those without such diagnoses (45.9%; $\chi^2 = 25.68$, $P < 0.001$). The two groups were, however, similar regarding employment and country of origin.

Because differences in age and sex ratio might have generated differences in Early SRE score observed between the two groups, a logistic regression analysis was computed to verify that the difference in Early SRE score observed between patients with and without alcohol use disorder persisted in the presence of demographic variables such as age, sex, employment, and country of origin. Although not reported, results indicated that the Early SRE score independently predicted alcohol abuse or dependence (standardized coefficient beta = 0.12, $t = 2.07$, $P < 0.05$) in the presence of the demographic variables included in the model.

Finally, the sensitivity and specificity of the Early SRE score to identify subjects with alcohol abuse or dependence was explored through an AUROC analysis illustrated with the ROC curve shown in Fig. 1. Results demonstrated that the AUROC was 0.69, and considering a Total SRE score cut-off of 2, the instrument identified 84% of the subjects with alcohol abuse or dependence (sensitivity), while 57% of those without such diagnosis were correctly classified (specificity).

In order to further explore the applicability of the SRE in primary care patients, the results reported with the Early SRE were repeated using the Total SRE, which reflects both the native and acquired tolerance to alcohol. Results indicated higher Total SRE scores in patients with alcohol abuse or dependence compared to those without such diagnosis (6.2 ± 3.72 vs 3.2 ± 3.21, respectively; $t = 6.18$, $P < 0.001$). A logistic regression analysis indicated that the Total SRE score independently predicted alcohol abuse or dependence (standardized coefficient beta = 0.51, $t = 4.43$, $P < 0.001$) in the presence of the demographic variables included in the model. Finally, considering a Total SRE score cut-off of 3, the instrument demonstrated a sensitivity of 84% and a specificity of 65% to identify patients with alcohol abuse or dependence (AUROC = 0.82).

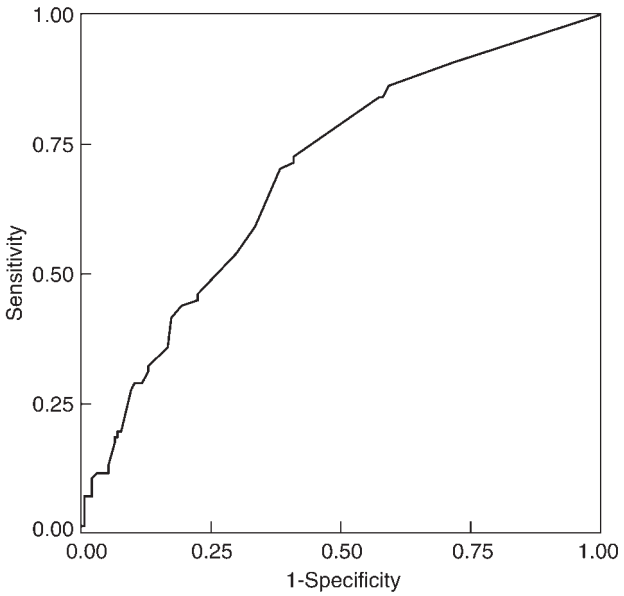

Fig. 1. Sensitivity and specificity of the Early Self-Rating of the Effects of alcohol (SRE) score to identify alcohol abuse* or alcohol dependence* in 244 primary care patients.
*According to DSM-IV (American Psychiatric Association, 1994).

DISCUSSION

The data reported indicate that primary care patients with lifetime histories of alcohol abuse or dependence, recalling their early experiences with alcohol, reported requiring more drinks to become intoxicated than those without such diagnosis. The moderate to high sensitivity and specificity of the SRE in identifying alcohol abuse or dependence in primary care patients suggest that the SRE could be used to screen for alcohol abuse or dependence in primary care.

In interpreting these results, it is important to note that retrospective analyses such as these might be biased by recent drinking experiences. However, other analyses, including those from prospective studies, have demonstrated that SRE values generated at about age 40 years correlated with the results of alcohol challenges carried out 15 years previously (Schuckit *et al*., 1997*b*), suggesting that the current data might represent a real phenomenon rather than just poor recollection.

Additional limitations in these data should be acknowledged. The majority of patients were Caucasian and male, so results may not generalize to women and other ethnic groups. Finally, despite efforts to optimize the accuracy of the data through personal interviews, no resource persons were available to corroborate information provided by the patients; therefore the data depend on both the truthfulness of subjects and on the accuracy of their recollections of early drinking experiences. Further studies in this area will therefore need to address these limitations.

REFERENCES

American Psychiatric Association (1994) *Diagnostic and Statistical Manual of Mental Disorders*, 4th edn. American Psychiatric Association, Washington, DC.

Schuckit, M. A. (1994) Low level of response to alcohol as a predictor of future alcoholism. *American Journal of Psychiatry* **151**, 184–189.
Schuckit, M. A. and Smith, T. L. (1996) An 8-year follow-up of 450 sons of alcoholic and control subjects. *Archives of General Psychiatry* **53**, 202–210.
Schuckit, M. A., Smith, T. L. and Tipp, J. E. (1997*a*) The self-rating of the effects of alcohol (SRE) form as a retrospective measure of the risk for alcoholism. *Addiction* **92**, 979–988.
Schuckit, M. A., Tipp, J. E., Smith, T. L., Wiesbeck, G. A. and Kalminjn, J. (1997*b*) The relationship between self-rating of the effects of alcohol and alcohol challenge results in ninety-eight young men. *Journal of Studies on Alcohol* **58**, 397–404.

APPENDIX

The SRE form to be filled out by subjects regarding the number of standard drinks required to produce four possible types of effects at three different time points

On this form, please tell us about your *ACTUAL* experiences of drinking alcohol. Please answer each question as accurately as possible. Give only one answer for each question. Please do not give ranges (i.e. don't list 4–6 drinks; write 5).

To fill out this form:

- One drink of alcohol = 12 oz. beer, a 4 oz. glass of wine, or a single shot of hard alcohol alone or in a mixed drink.
- If a question does not apply to you, write N/A in the space provided and move on the questions that relate to you.

1. Begin with column A: How many drinks did it *actually* take 'for you to begin to feel any different' *the first 5 times (or so) you ever drank alcohol?* DO NOT count sips taken as a child. Place your answer in column A, just to the right of Question 1.
2. How many drinks did it *actually* take 'for you to feel a bit dizzy, or to begin to slur your speech' *the first 5 times you ever drank?* Place your answer in Column A, next to Question 2.
3. Now, complete column A for Questions 3 and 4, filling in the number of drinks it *actually* took for you to feel the effect listed in the left side of the Table.
4. Next, fill in the same information for column B: for your most recent period of drinking at least once a month for 3 consecutive months.
5. Finally, fill in column C: How many drinks did it *actually* take to feel the effects listed at the left during your *period of heaviest drinking?*

	A	B	C
Effect of drinking alcohol (answer only those which apply to your actual drinking experiences)	First 5 times you ever drank	3 months drinking once a month	Period heaviest drinking

(1) How many drinks did it take for you to begin to *feel different* (where you could feel an effect)?
(2) How many drinks did it take for you to feel a bit *dizzy*, *or to begin to slur your speech*?
(3) How many drinks did it take you to begin stumbling, *or walking in an uncoordinated manner*?
(4) How many drinks did it take you to pass out, or fall *asleep when you did not want to*?