Acta Psychiatr Scand 1989:80:514–517

Key words: benzodiazepine; drug abuse; drug dependence; drug screening.

Does routine screening for benzodiazepines help to diagnose dependence in psychiatric inpatients?

S. Priebe, O. Liesenfeld*, B. Müller-Oerlinghausen

Department of Psychiatry, Free University of Berlin, West Berlin

ABSTRACT - After admission, 899 inpatients of a psychiatric university hospital were routinely screened for benzodiazepines (BDZ) in the urine. BDZ were detected in 134 (15%) patients with various primary diagnoses. Criteria for BDZ abuse or dependence were found in 36 patients. In 35 cases, either intake of BDZ had not been reported in the first psychiatric interview, or such a report had not been documented in the patient's charts. None of these 35 patients was found to have BDZ abuse or dependence. Psychiatric inpatients with BDZ abuse or dependence seem to report their intake of BDZ. These findings suggest that a routine screening for BDZ can hardly help to diagnose dependence within a university hospital setting. Nevertheless, an objective test for intake of BDZ may be useful in special cases.

Received October 1, 1988; accepted for publication June 28, 1989

Epidemiological studies in various Western countries, including the Federal Republic of Germany, indicate prevalence figures for the intake of psychotropic drugs between 9% and 22% of the general adult population. The figures are comparatively higher in women and older people (1, 2). Benzodiazepines (BDZ) amount to approximately two thirds of total psychotropic drug use (3). Exact incidence figures for BDZ abuse and dependence in the general population are not known. In studies investigating the frequency of BDZ abuse or dependence among psychiatric inpatients, figures of up to 4.7% have been found (4–6).

In order to provide objective information as to whether patients have been taking BDZ, urine screening tests were introduced. Several studies showed discrepancies between results of these tests and patients' statements about their drug-taking behaviour (4, 6–8). Ahrens et al. (4) found in a university hospital that 15% of the patients with a positive test result had not reported taking BDZ in a questionnaire. They suspected that patients with BDZ abuse or dependence might particularly tend to conceal their BDZ intake. In the present study, results of a routine screening were compared with data that were not obtained by a questionnaire, but by the psychiatric examination of the patient. We investigated whether such a screening test would yield information that had not been revealed in a psychiatric interview, and whether a positive test result would be helpful in diagnosing BDZ dependence in psychiatric inpatients.

Material and methods

For a 13-month period, urine collected at admission of all 899 inpatients of the psychiatric uni-

* The results are part of the doctoral thesis of O.L.

Table 1
Primary psychiatric diagnoses according to ICD-9 classification in all 134 patients with a positive test, in the 35 patients who may have not reported their BDZ intake, and in the 8 patients whose tests again became positive after having been negative

	All 134 patients with a positive test	35 patients without report of BDZ intake	8 patients with positive tests (after negative test)
Organic psychoses and syndromes (ICD 290-294, 310)	9	3	-
Schizophrenic psychoses (ICD 295)	36	11	2
Affective psychoses (ICD 296)	33	10	2
Neurotic, reactive, and personality disorders (ICD 300, 301, 308, 309)	44	7	4
BDZ abuse (ICD 305.4)	1	-	-
BDZ dependence (ICD 304.1)	2	-	-
Alcohol dependence (ICD 303)	1	1	-
Other diagnoses (ICD 297, 298, 317)	8	3	-

versity hospital in Berlin, a typical moderately sized university hospital, were routinely screened for BDZ and other legal or illegal drugs. BDZ were assessed by an enzyme immunoassay (EMIT-d.a.u.®). The assay is semiquantitative: a sample is considered positive if the concentration is equal to or higher than the low calibrator (0.3 µg oxazepam/ml) and double positive, if it is equal to or exceeds the concentration of the medium calibrator (1.0 µg oxazepam/ml). The sensitivity of the EMIT system is different for the 23 BDZ available in the Federal Republic of Germany, and the test does not allow differentiation between various BDZ compounds. Bromazepam, oxazepam, and flunitrazepam will not be assessed with sufficient sensitivity (9–11). Also lorazepam will often lead to false negative results if the test is used in its original form, i.e. without hydrolysing the urine samples before the assay. According to our own investigations in healthy volunteers (Kottmann & Müller-Oerlinghausen, unpublished), the original EMIT test will give a positive result 12 h after ingestion of a single dose of 5 mg diazepam or 0.5 mg triazolam, whereas after single doses of 1 mg lorazepam or 6 mg bromazepam false negative results are to be expected. After ingestion of the above-mentioned doses over 7 days, lorazepam and bromazepam will still not be detected with sufficient reliability, whereas oxazepam will produce a positive signal the day after drug withdrawal.

The reliability of the method has been tested by cross-checking 500 samples, which were assessed using the same method in another laboratory in West Berlin.

After admission, all patients underwent a thorough psychiatric examination, which included questions about previous and current drug-taking behaviour, and is routinely conducted by the clinician. The information gained through this interview was then documented in the patient's charts. Missing information about intake of BDZ thus meant either that the patient had stated that he was not taking BDZ, or (rarely) that the clinician failed to document statements by the patients about taking BDZ. Afterwards, results of the urine test were directly reported to the clinician. He could always consider this information when making his final judgement about diagnosis and treatment.

Statements about drug-taking behaviour made by patients with a positive test in the psychiatric examination and their clinical features were studied.

Results

In 134 (15%) of the 899 newly admitted patients, BDZ were detected in the urine. From these 134 patients, 80 samples were considered simple positive, and 54 double positive; 88 were female, 46 male. Their ages ranged from 17 to 81 years (mean = 44). For 60 patients, this was the first psychiatric inpatient treatment; 16 patients had previously been in psychiatric hospitals more than 3 times. The distribution of sex, age, and diagnoses of the 134 patients with a positive BDZ

test correspond to that of all patients in our hospital. In 35 cases (26%) either patients had not reported taking BDZ in the first psychiatric interview, or these statements had not been documented. So only for these 35 patients might a routine screening for BDZ have yielded additional information. Because all 134 patients were withdrawn from BDZ, subsequent repeated urine tests for BDZ became negative after a maximum of 3 weeks. After these 3 weeks and a final negative result, further screening tests were ordered by the psychiatrists in special cases. Thus, BDZ were again detected in the urine of 8 patients still undergoing inpatient treatment. This means that these patients had taken BDZ secretly and against their psychiatrists' directions. Six of them fulfilled DSM-III criteria for BDZ dependence. Table 1 summarizes the main psychiatric diagnoses according to ICD-9 classification (12) of all 134 patients, of the 35 patients who may not have reported their BDZ intake, and of the 8 patients whose urine tests again became positive after having been negative.

In 2 of 134 patients, BDZ dependence presented the main psychiatric diagnosis according to ICD-9 classification. BDZ abuse was the primary diagnosis in only 1 patient. However, in 4 patients BDZ dependence and in 12 patients BDZ abuse were found as a secondary or third diagnosis. After discharge, all data obtained about the patients during inpatient treatment as documented in the comprehensive charts were reviewed. Besides the 19 patients diagnosed as having BDZ dependence or abuse by their psychiatrists, another 10 patients were found to fulfil DSM-III criteria of BDZ abuse, and a further 7 patients fulfilled DSM-III criteria of BDZ dependence (analysis of World Health Organization (WHO) criteria gave the same picture) without thus being diagnosed by their clinicians. So altogether there were 36 patients with BDZ abuse or dependence. In the group of 35 patients who had not reported taking BDZ in the first psychiatric examination, most patients were found to have psychotic disorders, and one patient to have alcohol dependence. BDZ dependence or abuse was not diagnosed as a primary diagnosis in this group by the clinicians, nor was it seen as a secondary or tertiary diagnosis in any of these patients. Neither did the review of patient's data made after discharge reveal DSM-III or WHO criteria for BDZ dependence or abuse in any of these patients.

Table 2 shows which types of BDZ all patients, the 36 patients with a BDZ dependence or abuse, and those 8 patients whose urine tests again became positive, said they had taken. Altogether, 122 patients reported having taken 1 BDZ, and 22 said they had been taking 2 different BDZ.

The distribution of types of BDZ did not clearly differ between the 3 groups.

Table 2
Types of BZD in all 134 patients with a positive test, in the 36 with criteria of BZD abuse or dependence, and in the 8 patients whose tests again became positive after having been negative

	All 134 patients with a positive test	36 patients with criteria of BDZ abuse or dependence	8 patients with positive tests (after negative test)
Bromazepam	26	10	2
Chlordiaze-poxide	17	7	-
Clobazam	12	5	-
Diazepam	37	15	3
Dikalium-chlorazepate	9	4	1
Flurazepam	13	6	2
Flunitrazepam	10	4	3
Lorazepam	9	5	1
Lormetazepam	2	1	-
Nitrazepam	2	1	-
Oxazepam	9	3	-
Prazepam	4	1	-
Triazolam	6	1	-

Discussion

The EMIT-d.a.u. BDZ assay is not reliable in assessing the intake of regular doses of all BDZ. It can therefore be supposed that more patients had actually taken BDZ than the test revealed. However, we do not assume that the patients who had taken BDZ and had a negative test would conceal their intake of BDZ in an interview more often than those with a positive test. So, the limited reliability of the EMIT-d.a.u. BDZ assay should not affect our findings about the value of a routine screening for diagnosing dependence.

There may be various reasons for the fact that, for 35 patients, statements about intake of BDZ were not made or documented. For example, in some psychotic patients formal thought disorders could have made a comprehensive interview impossible. The proportion of patients who had not reported their BDZ intake varied between 15% and 36% in other studies (4, 8). It was 26% in this study. It should be taken into account that the information was provided through an interview and not through a questionnaire and that these interviews were carried out within the institutional setting of a university hospital, which allows a comprehensive examination of every patient. All patients who fulfilled criteria for BDZ abuse or dependence had reported taking BDZ. Of course, both the clinician and our analysis of all data gained about the patient might have failed to diagnose actual dependence or abuse in some patients. Even if that was the case, it must be noted that the positive urine test did not help decisively in reaching that final diagnosis. That patients with BDZ dependence or abuse do not conceal that they take BDZ may partly be caused by the comparatively good social acceptance of these drugs.

Conclusions

The 8 cases for which urine tests for BDZ again became positive after having been negative demonstrate that an objective test for intake of BDZ may be helpful under special circumstances. However, a routine screening administered after admission did not identify patients with BDZ abuse or dependence who had not reported their BDZ intake. So, the test could not help to diagnose BDZ dependence in psychiatric inpatients.

References

1. Koenig W, Rüther E, Filipiak B, Keil U. Determinants of psychotropic drug intake in a metropolitan population. Pharmacopsychiatry 1986:*19*:320–332.
2. Parry HJ, Balter MB, Mellinger GD, Cisin IH, Manheimer DI. National patterns of psychotherapeutic drug use. Arch Gen Psychiatry. 1973:*28*:769–773.
3. Müller-Oerlinghausen B. Prescription and misuse of benzodiazepines in the Federal Republic of Germany. Pharmacopsychiatry 1986:*19*:8–13.
4. Ahrens S, Kanzow T, Kernbichler A. Ergebnisse eines Medikamenten-Screening stationär aufgenommener Patienten einer psychiatrischen Universitätsklinik. Nervenarzt 1986:*57*:532–537.
5. Fleischhacker WW, Barnas C, Hackenberg B. Epidemiology of benzodiazepine dependence. Acta Psychiatr Scand 1986:*73*:80–83.
6. Schmidt LG, Grohmann R, Müller-Oerlinghausen B, Otto M, Rüther E, Wolf B. Prevalence of benzodiazepine abuse and dependence in psychiatric inpatients with different nosology: an assessment of hospital-based drug surveillance data. Br J Psychiatry 1989:*154*:839–843.
7. Gold MS, Dackis CA. Role of laboratory in the evaluation of suspected drug abuse. J Clin Psychiatry 1986:*47*:17–23.
8. Parquet PJ, Bailly D, Deceaux M, Muller P. Intérêt de l'analyse toxicologique systématique dans la pris en charge des toxicomanes. Encéphale 1987:*13*:219–223.
9. Bäumler J. Der analytische Nachweis von akuten Vergiftungen. MTA-J 1985:7360–364.
10. Oellerich M. Anwendung der EMIT-Technik beim Drogenscreening. In: Vogt W, ed. Praktische Anwendung des Enzymimmunoassays in klinischer Chemie und Serologie. Stuttgart: Thieme, 1979:66–75.
11. Schütz H. Screening von Benzodiazepinen. Ärztl Lab 1982:*28*:117–132.
12. World Health Organization. Manual of the international statistical classification of diseases, injuries, and causes of death. Based on the recommendations of the Ninth Revision Conference, 1975, and adopted by the Twenty-ninth World Health Assembly. Volume 1. Geneva: World Health Organization, 1977.

Address
Dipl.-Psych. Dr.med. *Stefan Priebe*
Department of Social Psychiatry
Free University of Berlin
Platanenallee 19
D-1000 Berlin 19