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Psychotropic drug prescriptions in hospitalized elderly psychiatric patients: comparison with adult psychiatric patients

THESE

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RÉSUMÉ

Comparaison des habitudes de prescription de médicaments psychotropes dans des cliniques de psychiatrie adulte et de psychogériatrie

Afin de pouvoir comparer l'utilisation de médicaments psychotropes et non psychotropes, la proportion des nouveaux et celle des anciens antidépresseurs ou antipsychotiques, ce travail a eu pour but d'étudier les prescriptions médicamenteuses dans deux groupes de patients hospitalisés, l'un en milieu psychiatrique adulte (de 18 à 64 ans), l'autre en milieu psychogériatrique (plus de 64 ans).

Lors d'un jour de référence en Mai 2000, toutes les prescriptions médicamenteuses dans deux hôpitaux psychiatriques universitaires abritant l'un une population adulte, l'autre gériatrique, ont été relevées chez tous les patients. Le coût financier total par patient a été comparé en tenant compte de la proportion des médicaments non psychotropes.

La médication de 61 patients adultes et de 82 patients gériatriques a ainsi été analysée. Le nombre moyen de médicaments non psychotropes par patient était plus élevé dans la population âgée ($p < 0.001$), ce qui se reflète également par une prescription totale de médicaments par patient en moyenne plus élevée dans cette population ($p < 0.001$). L'utilisation de benzodiazépines était inférieure dans la population psychogériatrique ($p < 0.001$), même si l'on y additionne celle en association avec les antidépresseurs ($p < 0.001$). Le coût financier du traitement pharmacologique quotidien d'un patient adulte était significativement inférieur à celui d'un patient gériatrique dont la comédication somatique est nécessairement plus importante (9.3 ± 7.2 CHF/patient contre 14.1 ± 9.5 CHF/patient) ($p < 0.009$).

En conclusion, cette étude confirme l'importance des habitudes locales dans la prescription médicamenteuse par les médecins, à l'exception de l'utilisation des benzodiazépines pour lesquelles les psychogériâtres semblent moins favorables.

Psychotropic drug prescriptions in hospitalized elderly psychiatric patients: comparison with adult psychiatric patients

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ABSTRACT

Background and objective

Drug prescriptions were studied in two samples of inpatients, which differed by their age (patients 18 to 64 y vs elderly patients > 64 y), in order to compare the use of psychotropic and non-psychiatric drugs, and the proportion of newer vs classical antidepressants or antipsychotics.

Methods

Drug prescription was recorded on a reference day in May 2000 in two hospitals, which differed by the age categories of the patients who were admitted. The total costs per patient were compared, as well as the proportion of those due to a somatic medication.

Results

The prescriptions of 61 adult patients and of 82 psychogeriatric patients were assessed. The mean number of prescribed somatic drugs per patient was higher in elderly patients (p < 0.001), which was again reflected in a higher mean number of all drugs jointly (p < 0.001). Prescription of benzodiazepines was lower in elderly patients than in the adult patients (p < 0.001), also of that in addition to antidepressants (p < 0.001). The pharmacological treatment of adult patients (9.3 ± 7.2 Swiss Francs/patient) was significantly less expensive than that of the psychogeriatric patients (14.1 ± 9.5 Swiss Francs/patient) (p = 0.009), who had a higher need for somatic comedications.

Conclusions

This survey confirms the large impact of local traditions on the prescription habits of clinicians, with the exception of the prescription of benzodiazepines, for which psychiatrists of psychogeriatric patients seem to be more reluctant.

Key words

Antidepressants, antipsychotic drugs, geriatric psychiatry, pharmacoepidemiology, adult, aged

Introduction

There have been recently several studies performed in order to understand the factors which influence the prescription of psychotropic drugs [1-4]. Characteristics of the health care system, physician management style, physician specialty and training, public attitudes, drug cost and availability, patients preferences, local tradition education, marketing and formulary have been reported to have some impact on the prescription habits [5-9]. On the other hand, patients characteristics have been described have less impact on the prescription [5, 7].

Whereas there is some data on prescribing habits of psychotropic drugs for elderly patients [10-13], a direct comparison with younger adults has, to our knowledge, not been published until now. A direct comparison between a geriatric and an adult sample would allow ruling out the bias of sociocultural factors. The comparison between two samples of a same health care system could avoid, furthermore, educational issues.

The population of elderly patients is characterized by multiple comorbidities and is, subsequently, often polymedicated. This is, among others, associated with an increased risk for pharmacodynamic and pharmacokinetic interactions. Though, the indications of psychotropic drugs in elderly patients are usually identical to those of younger adults, the contraindications have to be evaluated more carefully in elderly subjects [11, 14, 15]. Moreover, some drugs are specifically used for conditions exclusively seen in the geriatric population, e.g. cognitive enhancers.

The arrival of new drugs, especially newer antidepressants, antipsychotics and mood stabilizers, has been expected to have achieved rapid acceptance by prescribers because of enhanced safety profiles, relative to those observed with older drugs [1, 16]. This may be particularly true for the prescription in elderly patients.

The aim of the present study was to compare the prescriptions in a sample of inpatients aged 18 to 64 y and a sample of elderly inpatients aged > 64 y, treated in two hospitals, which are located on the same site, and have a common medical educational program.

Methods

The present study was realized as part of the AMSP project (Arzneimittelsicherheit in der Psychiatrie = drug safety in psychiatry), which is a program for continuous assessment of adverse drug reactions in psychiatric inpatients under naturalistic conditions of routine clinical treatment. The methodology has been described elsewhere [17-19]. Currently, more than 35 German and Swiss sites are participating. Data on drug use in the participating hospitals are based on two reference days per year. All drugs given on a reference day are recorded along with age, sex, and diagnosis (ICD-10) for all patients under surveillance. The daily dosage is also recorded.

The data of the present study are drawn out of the reference day of Mai 2000 in the psychiatric hospital and the psychogeriatric hospital of the University of Lausanne, Switzerland. Whereas, the two hospitals are affiliated to different departments (Department of Psychogeriatry and Department of Adult Psychiatry), both are located on the same site sharing most paramedical and logistical facilities. The medical postgraduate education and the continued medical education are commonly organized by both departments. During their residence training numerous physicians have accomplished stages in both clinics.

The psychogeriatric hospital of Lausanne is a 88-bed hospital for psychiatric patients aged 65 years and more. The mean hospitalization duration is 60 days, and the nurse/bed ratio 0.8. The psychiatric hospital for adult patients has 98 beds. The mean hospitalization duration is 20 days and the nurse/bed ratio is 0.95.

The objective of the present study was to compare the average prescription of psychotropic and nonpsychotropic drugs. The percentage of patients without psychotropics, the proportion of new

antidepressants versus older antidepressants, and of atypical antipsychotics versus classical antipsychotics were analyzed.

Definition of substance classes:

"Newer antidepressants" were defined as the selective serotonin reuptake inhibitors paroxetine, sertraline, fluoxetine, citalopram and fluvoxamine as well as mirtazapine, reboxetine, nefazodone and moclobemide. At the time of the reference day, reboxetine was not yet introduced in Switzerland.

The group of "atypical antipsychotics" included clozapine, olanzapine, risperidone and amisulpride.

Analyses

Both hospitals were compared with respect to the mean prescription of psychotropic and nonpsychotropic drugs, the proportion atypical antipsychotics/all antipsychotics, the proportion newer antidepressants/all antidepressants. Furthermore, the utilization of anticholinergics was compared between patients receiving conventional antipsychotics with those receiving atypical antipsychotics only. Finally the total costs per patient were compared, as well as the proportion of costs of somatic treatment.

Cost calculations

Costs per mg of each prescribed product were calculated on the basis of the price of the smallest package available on the Swiss market published in the Swiss Compendium of Drugs [20]. Costs were calculated in Swiss Francs. The change of one Swiss Franc was 0.68 Euros and 0.68 US Dollars on November 1, 2002. The cost per mg was multiplied per prescribed milligrams for each prescription.

Statistics

The Students t-test was used for comparison of continuous variables, and the Chi-square test for categorical variables. For all of the statistical tests, the significance level was set at $p < 0.05$. The data were analyzed using the *SPSS for Windows* program, version 11. 0.

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Results

The prescriptions of 61 adult patients and of 82 psychogeriatric patients were assessed. The mean ages were 41.6 ± 12.4 y (range 20 – 64 y) and 78.4 ± 8.2 y (range 65 – 95 y) respectively. The proportion of women was significantly higher (p = 0.001) in the psychogeriatric sample (63/82; 76.8 %) than in adult patients (29/61; 47.5 %).

The distribution of the adult patients regarding their primary ICD-10 diagnosis was: Mental and behavioral disorders due to psychoactive substance use (F10): 5 (8.2 %); schizophrenia, schizotypal and delusional disorders (F20): 29 (47.5 %); mood disorders (F30): 19 (39.4 %); behavioral syndromes associated with physiological disturbances and physical factors (F50): 1 (1.6 %); disorders of adult personality and behavior (F60): 7 (3.3 %). The distribution of the elderly patients was: Organic mental disorders (F0): 33 (40.2 %); mental and behavioral disorders due to psychoactive substance use (F10): 3 (3.7 %); schizophrenia, schizotypal and delusional disorders (F20): 10 (12.2 %); mood disorders (F30): 30 (37.8 %); neurotic, stress-related and somatoform disorders (F40): 4 (4.9 %); disorders of adult personality and behavior (F60): 1 (1.2 %).

Prescribed drugs per patient

Table 1 shows the number of prescribed drugs per patient. Whereas there was no significant difference with regard to psychotropic drugs, the mean number of prescribed somatic drugs per patient was higher in elderly patients (p < 0.001), which was again reflected in a higher mean number of all drugs jointly (p < 0.001).

Benzodiazepine prescriptions

There was a significant difference (p < 0.001) between the two groups with regard to the prescription of benzodiazepines. Of the 61 adult patients, 20 (32.8 %) had no benzodiazepine prescribed, 34 (55.7 %) received one and 7 (11.5 %) received two benzodiazepines. In the sample of elderly patients, the distribution was: 64 (78.0 %) subjects with no benzodiazepines and 18 (32.0 %) subjects with one benzodiazepine prescribed.

Prescription of antipsychotics

Thirty-seven adult and 53 psychogeriatric patients had received antipsychotics. Among the patients receiving antipsychotics in the adult sample 19 (51.4 %) had a conventional drug, 12 (32.4 %) received an atypical antipsychotic, and 6 (16.2 %) were treated with a combination of drugs from both classes. Among the psychogeriatric patients receiving antipsychotics 37 (69.8 %) were treated with a conventional drug, 13 (24.5 %) had an atypical antipsychotic, and 3 (5.7 %) a combination of both. The difference did not reach statistical significance.

Antidepressant prescriptions

The prescription practices of antidepressants are shown in Table 2. No difference was found with regard to the utilization of newer antidepressants, both clinics largely preferring new generation drugs. In up to two thirds of the patients in both clinics, antidepressants were prescribed in patients, who had a primary diagnosis other than depression or anxiety, i.e. the labeled indications for these drugs.

None of the patients of both samples had received more than one antidepressant. Only 8 patients in the elderly group, who had a primary diagnosis of depression, did not receive any antidepressant at the survey day, whereas all patients in the adult group were treated with antidepressants.

Significant differences between the two samples were found relating to the combination of antidepressants with benzodiazepines. The use of benzodiazepines in addition to antidepressants was more frequent in adult patients (p = 0.001).

A logistic regression was carried out to compare the prescription of benzodiazepines (dependent variable) between the two clinics controlling for sex, offlabel use of the antidepressant, and concomitant prescription of an antipsychotic. Overall, 69.3% of the patients were correctly classified. While the effects of sex and the concomitant prescription of an antipsychotic drug were not significant, the odds ratio of receiving a concomitant prescription of a benzodiazepine was 6.70 (90%CI: 2.16 – 20.75) for patients from the psychogeriatric wards. Also, receiving the antidepressant for an offlabel

indication (i.e. not presenting a depression or an anxiety disorder) increased the risk of concomitantly receiving a benzodiazepine by 3.50 (90%CI:1.16 – 10.30).

Costs of drug treatment

When comparing the two samples regarding the costs of all prescribed drugs per patient, the pharmacological treatment of the psychogeriatric patients was significantly more expensive than that of adult patients, with 14.1 ± 9.5 Swiss Francs/patient and 9.3 ± 7.2 Swiss Francs/patient respectively (p = 0.009) (Table 3). Whereas the costs per patient did not differ between the two groups with regard to psychotropic drugs and subclasses of psychotropic drugs (antidepressants, antipsychotics), there was a significant difference as to the costs for somatic drugs (p < 0.001).

Discussion

The present study compared prescription habits between a psychogeriatric hospital and a psychiatric hospital for adult patients. Whereas elderly patients received, as could be expected, at average more drugs per person, this difference was due to the higher utilization of somatic drugs, the frequency of psychotropic drugs not differing between the two samples. These figures were again found when comparing the cost data. The higher average cost per patient for the psychogeriatric group was due to the higher prescription rate of somatic drugs.

The most important difference with regard to the prescription habits of psychotropic drugs was the higher propensity of prescribers in the hospital for adult patients to use benzodiazepines. This effect remained statistically significant even after being controlled for sex, out-label prescription and concomitant antipsychotic drug prescription. One can hypothesize, that benzodiazepines may have been avoided in elderly patients in order to prevent cognitive side effects or myorelaxation associated falls. Interestingly, and independent from the age class of the patients, receiving an antidepressant without presenting a labeled indication for this drug (i.e. a depression or an anxiety disorder), increased the risk of having a concomitant benzodiazepine prescribed. One could cynically speculate

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that in a certain proportion of these "off-label patients" the antidepressant-benzodiazepine combination represents rather an indicator of pharmacotherapeutic helplessness than the result of a rational therapeutic strategy. As no patient records data on prescription rationales are available for the present analyses, this hypothesis has to remain speculative.

Treatment guidelines usually recommend psychopharmacological monotherapy [21, 22]. The present study finally confirms previous observations that psychotropic polypharmacy is rather the rule than the exception in psychiatric inpatient populations, as well in adult as also in elderly patients. We found a mean number of 2.7 ± 1.3 drugs for adult patients and 2.4 ± 1.3 drugs for elderly patients. The prescription frequencies in our survey were similar to those of many other studies, which showed that, habitually, an average of 2 or 3 psychotropic drugs are prescribed for psychiatric patients, both according to data collected cross-sectional or longitudinal surveys [22-27].

Possible bias of the survey may be due to its cross-sectional nature and the differences with regard to the proportions of diagnostic subgroups. A further limitation, which could have influenced the results, was that only the primary diagnosis was retained. No data on comorbid disorders, which could have influenced the choice of medication, were available.

Patients characteristics have previously been described to be taken less into account by doctors when choosing a treatment, while regional preferences and traditions often result being more important [5, 7].

One of the strength of this survey may be the comparison of two hospitals, which share the same pregraduate and postgraduate training, and sharing consequently a same diagnostic and pharmacotherapeutic tradition. This is revealed by the comparable diffusion of newer drugs, i.e. atypical antipsychotics and antidepressants of the newer generations. In contrast to what has been found in other studies [5, 7], we found patients characteristics to affect doctors decisions, but only with regard to the choice of sedative or anxiolytic medication.

It is also of interest that during our study carried out in 2000, depressive patients were only exceptionally treated with tricyclic antidepressants . This is in line with the trend observed in Ontario of an increasing prescription rate of SSRIs in elderly patients while that of tricyclics decreased between 1993 – 1997 [28]. In contrast, among the prescribed antipsychotics, the proportion of classical antipsychotics prescribed was still higher than that of atypical. However, this is not in contradiction with a study in veterans suffering from psychosis and treated with antipsychotics. There was a clear increase of the prescription of atypical antipsychotics between 1998 – 2000, but the part of conventional antipsychotics was still close to 40 % [29].

In conclusion, our study confirms the large impact of local traditions on the prescription habits of psychiatrists, with the exception of the prescription of benzodiazepines, for which psychiatrists of psychogeriatric patients seem to be more reluctant.

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Table 1. Number of prescribed drugs per patient

	Adult patients (n = 61)			Psychogeriatric patients (n = 82)			Statistics	p
	mean	SD	range	mean	SD	range		
Number of drugs/patient	3.6	1.8	0 - 8	5.9	2.6	1-11	t = -6.037	p < 0.001
Number of psychotropic drugs/patient	2.7	1.3	0 - 7	2.5	1.2	0 - 5	t = 1.109	p = 0.53
Number of somatic drugs/patient	0.9	1.2	0 - 5	3.4	2.3	0 - 9	t = -4.4	p < 0.001

Table 2. Antidepressant prescriptions

	Adult patients (n = 61)		Psychogeriatric patients (n = 82)		p
Antidepressants (n = 76)					
Tricyclics	2	6.7 %	1	2.2 %	p = 0.704
Newer AD	28	93.3 %	45	97.8 %	
Off label use AD (n = 76)					
Depression/Anxiety	10	33.3 %	14	46.7 %	p = 0.814
Other	20	66.7 %	24	52.2 %	
AD in depressed Patients (n = 39)					
Newer Antidepressant	9	90.0 %	20	69.0 %	p = 0.148
Tricyclics	1	10.0 %	1	3.4 %	
No antidepressant	0	0.0 %	8	27.6 %	
Benzodiazepines in AD treated patients (n = 76)					
Yes	21	70.0 %	13	28.3 %	p = 0.001
No	9	30.0 %	33	71.1 %	
Antipsychotics in AD treated patients (n = 76)					
Yes	13	43.3 %	29	63.0 %	p = 0.146
No	17	56.7 %	17	27.0 %	

Table 3. Costs of drug treatment*

	Adult patients (n = 61)		Psychogeriatric patients (n = 82)		Statistics	
	mean	SD	mean	SD		
Total costs of drugs per patient	9.3	7.2	14.1	9.5	t=-3.313	p=.001
Costs somatic drugs per patient treated with somatic drugs	3.4	3.1	6.8	6.4	t=-2.636	p=.010
Costs psychotropic drugs per patient	7.8	6.8	8.2	7.7	t=0.292	p=.771
Costs antipsychotics per patient treated with antipsychotics	5.8	5.8	4.1	6.4	t=1.317	p=.191
Costs antidepressants per patient treated with antidepressants	5.1	2.9	5.9	3.3	t=-1.072	p=0.287

* in Swiss Francs; cf Table 2 for the
number of patients in the subgroups