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# Consumption and cost of antipsychotic drugs

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**Introduction.** In recent years, new atypical antipsychotic drugs have been marketed. This study aims to analyze the evolution of the consumption pattern and pharmaceutical cost of the antipsychotic drugs during the last years and the impact that the new atypical antipsychotic drugs have had.

**Methods.** Based on the ECOM database of the Ministry of Health and Consumer Affairs of Spain, the sales data of the antipsychotic drugs in Catalonia during the 1990-2001 period have been chosen. The drugs have been classified into typical or classical and atypical. Consumption data have been expressed in daily defined dose (DDD) per 1,000 inhabitants and per day of treatment (DID), and cost data in constant euros.

**Results.** Antipsychotic consumption increased from 3.31 DID in 1990 to 6.04 DID in 2001. Typical drugs consumption decreased (from 100% consumption in 1990 to 46% in 2001) and that of the atypical ones increased (from 1% consumption in the year 1993 to 54% in the year 2001). A change in the use pattern of different drugs is verified. In the year 1990, the most consumed drugs were flupenthixol (0.86 DID) and haloperidol (0.67 DID), and in the year 2001 olanzapine (1.69 DID) and risperidone (1.30 DID). The drugs with a greater increase in consumption were olanzapine, which multiplied its consumption five fold from 1997 to 2001 and risperidone, which multiplied it by 20 from 1994 to 2001. During the study period, the cost increased 13 times, above all due to increase in cost of atypical antipsychotics (from less than 1% of the total cost in 1993 to 92% of the total cost in 2001). The DDD cost of antipsychotics increased (6.48 € in the year 1990 and 20.31 € in 2001). However, that of the typical antipsychotics decreased (6.48 € in 1990 and 4.62 € in 2001) and that of the atypical ones increased (2.06 € in 1993 and 15.69 € in 2001).

**Conclusion.** The marketing of the new atypical antipsychotic drugs has had an extraordinary impact on antipsychotic drug consumption and cost. The cost/effective-

ness ratio of the new atypical antipsychotic drugs in the clinical practice should be evaluated to determine the economic resources aimed at costs of the different antipsychotic drugs.

**Key words:**  
Antipsychotic drugs. Drug usage study. Drug consumption. Cost analysis. Schizophrenia.

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## Consumo y gasto de fármacos atípicos

**Introducción.** En los últimos años se han comercializado nuevos fármacos atípicos. El objetivo del estudio es analizar la evolución del patrón de consumo y del gasto farmacéutico de los fármacos atípicos durante los últimos años y el impacto que han tenido los nuevos fármacos atípicos.

**Métodos.** A partir de la base de datos ECOM del Ministerio de Sanidad y Consumo español se han seleccionado los datos de ventas de los fármacos atípicos en Cataluña durante el período 1990-2001. Los fármacos se han clasificado en típicos o clásicos y atípicos. Los datos de consumo se han expresado en dosis diarias definidas (DDD) por 1.000 habitantes y por día de tratamiento (DHD) y los de gasto en euros constantes.

**Resultados.** El consumo de atípicos aumentó de 3,31 DHD en 1990 a 6,04 DHD en 2001. El consumo de los típicos disminuyó (del 100% del consumo en 1990 a un 46% en 2001) y aumentó el de los atípicos (del 1% del consumo en el año 1993 a un 54% en el año 2001). Se constató un cambio en el patrón de uso de los diferentes fármacos. En el año 1990 los fármacos más consumidos fueron el flupentixol (0,86 DHD) y el haloperidol (0,67 DHD), y en el año 2001 la olanzapina (1,69 DHD) y la risperidona (1,30 DHD). Los fármacos con un mayor incremento del consumo fueron la olanzapina, que multiplicó por cinco su consumo de 1997 a 2001, y la risperidona, que multiplicó por 20 su consumo de 1994 a 2001. Durante el período de estudio el gasto aumentó unas 13 veces, sobre todo a causa del incremento del gasto de los atípicos (de menos del 1% del gasto total en 1993 a un 92% del gasto total en 2001). El coste de la DDD de los

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antipsicóticos se incrementó (6,48 € en 1990 y 20,31 € en 2001); sin embargo, el de los antipsicóticos típicos disminuyó (6,48 € en 1990 y 4,62 € en 2001) y el de los atípicos aumentó (2,06 € en 1993 y 15,69 € en 2001).

**Conclusión.** La comercialización de los nuevos antipsicóticos atípicos ha tenido un extraordinario impacto sobre el consumo y el gasto de los medicamentos antipsicóticos. Se debería evaluar la relación coste/efectividad de los nuevos antipsicóticos atípicos en la práctica clínica para determinar los recursos económicos destinados al gasto de los diferentes fármacos antipsicóticos.

**Palabras clave:**  
Fármacos antipsicóticos. Estudio de utilización de medicamentos. Consumo de medicamentos. Análisis de costes. Esquizofrenia.

## INTRODUCTION

Schizophrenia is a relatively frequent chronic psychiatric disease that affects about 1% of the population<sup>1-3</sup>. Until around one decade ago, drug treatment of schizophrenia was limited to the use of classic antipsychotic drugs such as phenothiazines and butyrophenones<sup>4</sup>. Although most of the patient have a decrease in positive symptoms with these drugs, approximately 30% do not respond and the improvement of negative symptoms is very limited. On the other hand, some patients have undesired effects that make it necessary to discontinue treatment<sup>5</sup>. In the decade of the nineties, new antipsychotic drugs, called atypical, were marketed because they had a different profile of undesired effects from those of the classical or typical ones<sup>6</sup>. In addition, it was suggested that the new antipsychotics were associated to a lower incidence of undesired effects<sup>7</sup> and of problems related with intoxications<sup>8</sup>, thus improving patient treatment compliance. However, these arguments have been a cause of controversy, since several studies state that they are not better tolerated than the typical ones<sup>9-11</sup>, nor do they improve treatment compliance and that, furthermore, their benefit/cost ratio is questioned due to its high price<sup>11</sup>.

There are few studies that have analyzed the evolution of antipsychotic drug consumption in our country as well as the impact of atypical antipsychotics and their repercussion on pharmaceutical costs. Although a recent study has shown that the consumption of atypical antipsychotics has increased in Spain<sup>12</sup>, however, its economic impact was not analyzed. The objective of this study has been to analyze the evolution of the consumption pattern and pharmaceutical cost of the antipsychotic drugs in Catalonia during recent years, and the impact that the new atypical antipsychotic drugs have had on consumption and pharmaceutical cost.

## MATERIAL AND METHODS

This is a descriptive designed study that evaluates antipsychotic drug consumption in Catalonia during a 12 year period, from 1990 to 2001. The consumption data were obtained

from the ECOM (medicinal products billed to the National Health System in the community scope) database of the Ministry of Health and Consumer Affairs, that includes information on the prescriptions emitted at the cost of the National Health Service. Using a structured case report form, information was gathered on the following variables: year, antipsychotic drug group, type of antipsychotic drug, number of units dispensed and economic cost. The yearly demographic figures for the Catalan population were obtained from the TEMPUS database of the National Institute of Statistics.

All the medicinal products of the antipsychotic drugs group (group N05) of the Anatomical Therapeutic Chemical (ATC) classification (WHO Collaborating Centre for Drug Statistics Methodology, 1998) marketed in Spain during the study period were chosen: *a*) phenothiazines with aliphatic side chain (N05AA group) that includes chlorpromazine and levomepromazine; *b*) phenothiazines with piperazine structure (N05AB group) with fluphenazine, trifluoperazine, thioroperazine and perphenazine; *c*) phenothiazines with piperidine structure (N05AC group) with periciazine, thioridazine and pipotiazine; *d*) butyrophenone derivatives (N05AD group) with haloperidol; *e*) indole derivatives (N05AE group) with sertindole; *f*) thioxanthene derivatives (N05AF group) with flupentixol and zuclopentixol; *g*) difenylbutylpiperidine derivatives (N05AG group) with pimozide; *h*) diazepines, oxazepines and thiazepines derivatives (N05AH group) with loxapine, clozapine, olanzapine and quetiapine; *i*) benzamides (N05AL group) with sulpiride and tiapride, and *j*) other antipsychotics (N05AX group) with risperidone and clozapine. Lithium (N05AN group) was excluded from the study because it was considered that its use was specific for the prevention of manic-depressive disease. Clozapine, risperidone, olanzapine, sertindole and quetiapine were classified as atypical antipsychotics and the rest were classified as typical antipsychotics (table 1). The consumption unit was the daily defined dose (DDD), established by the WHO Collaborating Center for Methodology in Statistics on Drugs<sup>13</sup>. Table 1 indicates the DDD of the different antipsychotic drugs marketed in Spain during the study period. The number of DDD consumed was expressed per 1,000 inhabitants and per day (DID). The drug cost and cost per DDD were expressed in euros (€). The yearly drug cost was counted in constant currency, so that a deflation operation of the series or adjustment of yearly drug cost was performed based on the annual variation of the drug price index, using the Laspeyres price index<sup>14,15</sup>, according to the National Institution of Statistics data. The DDD cost of the classical and new drugs was calculated with the quotient between the total cost and number of DDD. The statistical analysis of the data was performed with the SPSS statistical program, Windows version 10. A descriptive statistics of the variables analyzed was performed.

## RESULTS

Antipsychotic drug consumption progressively increased from 3.31 DID in the year 1990 to 6.04 DID in 2001 (fig. 1).

Table 1			
Daily defined doses (DDD) of the antipsychotics sold in Spain			
Drugs	DDD (mg)	Administration route	First year of marketing
<b>Typical antipsychotics</b>			
Chlorpromazine	300	Oral and rectal	1953
	100	Parenteral	
Levomepromazine	300	Oral	1967
Fluphenazine	10	Oral	1975
	1	Parenteral	
Perphenazine	30	Oral	1971
Trifluoperazine	20	Oral and rectal	1971
Thiopropazine	75	Oral	1962
Periciazine	50	Oral	1971
Thioridazine	300	Oral	1967
Pipotiazine	10	Oral	1975
Haloperidol	8	Oral and parenteral	1967
Flupentixol	6	Oral	1972
Zuclopenthixol	30	Oral and parenteral	1994
Pimozine	4	Oral	1972
Loxapine	100	Oral	1982
Sulpiride	800	Oral and parenteral	1970
Tiapride	400	Oral and parenteral	1978
<b>Atypical antipsychotics</b>			
Clozapine	300	Oral	1993
Risperidone	5	Oral	1994
Olanzapine	10	Oral	1997
Sertindole	16	Oral	1997
Quetiapine	400	Oral	2000

The increase in total consumption of antipsychotics was mainly due to the increase in consumption of atypical drugs that went from 0.004 DID in 1993, 1% of the total consumption, to 3.27 DID in 2001, 54% of the total consumption (fig. 1). Parallely, the consumption of typical antipsychotics increased until 1996 (4.18 DID, 91% of the total consumption) and then progressively decreased to 2.77 DID in the year 2002 (46% of the total consumption) (fig. 1). The evolution of the consumption of the different typical and atypical antipsychotic drugs is shown in tables 2 and 3, respectively. The evolution of the typical antipsychotics consumed most in 1990 is shown in figure 2 and that of the consumption of the atypical ones in figure 3. In 1990, the four drugs consumed most were flupentixol (0.86 DID), haloperidol (0.67 DID), fluphenazine (0.46 DID) and thioridazine (0.39 DID) and accounted for 72% of the total consumption (table 2 and fig. 2). On the other hand, in the year 2001, they were olanzapine (1.69 DID), risperidone (1.30 DID), haloperidol (0.55 DID) and fluphenazine (0.52 DID) and accounted for 95% of the total consumption (tables 2 and 3 and fig. 3). Although in general, consumption of typical

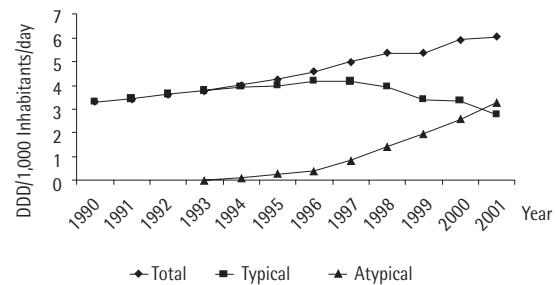


Figure 1 Evolution of antipsychotic consumption in Catalonia.

antipsychotics has decreased during the study period, the consumption evolution of the different active ingredients has varied. Thus, consumption of haloperidol increased to 1.11 DID in 1998 and then decreased to 0.55 DID in 2001; that of flupentixol progressively decreased until it was withdrawn in 1999. That of clozapine increased from 0.16 DID in 1990 to 0.34 in 2001 and, on the other hand, the consumption of fluphenazine and thioridazine has remained stable during the entire study period (fig. 2). Consumption of all the atypical antipsychotic drugs has increased, however those having a greater increase in consumption have been olanzapine (from 0.34 DID in 1997 to 1.69 DID in 2001; in five years it has increased 5 fold), risperidone (from 0.06 DID in 1994 to 1.30 DID in 2001; in 8 years, it has been multiplied by twenty) and quetiapine (from 0.01 DID in 2000 to 0.15 in 2001; in 2 years, it has been multiplied by ten) (fig. 3).

The total cost also progressively increased during the study period (table 4). The total cost originated by antipsychotic drug consumption was 2,318,498 € (373,814,833 ptas) in the year 1990 and 29,448,496 € (4,899,817,525 ptas) in the year 2001. This increase in cost was due, above all, to the increase in atypical antipsychotic cost, from 20,622 € (3,437,000 pts) in 1993 to 27,020,300 € (4,495,799,674 ptas) in 2001. During all the twelve year period analyzed, the total cost of the antipsychotics was 130,718,328 €, of which 33,245,876 € corresponded to the cost originated by the sale of the typical drugs and 97,472,452 to the cost of the atypical ones. Table 5 shows the evolution of the cost of the DDD of the antipsychotic drugs. The DDD cost increased from 6.48 € in 1990 to 20.31 € in 2001. It can be stressed that while the cost of the DDD of the typical antipsychotic drugs decreased (6.48 € in the year 1990 and 4.62 € in 2001), that of the atypical ones increased considerably (2.06 € in the year 1993 and 15.69 € in the year 2001).

## DISCUSSION

Consumption of antipsychotic medication in Catalonia has practically doubled during the last decade. The consumption pattern of these drugs has also changed, since

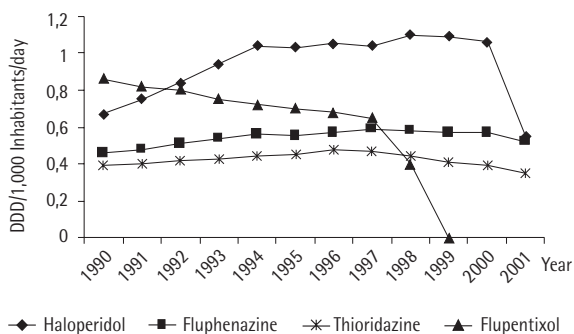
Groups drugs	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Phenothiazines</b>												
Chlorpromazine	0.08	0.09	0.10	0.09	0.09	0.09	0.11	0.11	0.10	0.09	0.08	0.07
Fluphenazine	0.46	0.48	0.51	0.54	0.57	0.55	0.58	0.60	0.58	0.57	0.56	0.52
Levopromazine	0.10	0.10	0.11	0.12	0.12	0.13	0.13	0.14	0.15	0.10	0.15	0.15
Periciazine	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.06	0.06
Perphenazine	0.20	0.20	0.21	0.22	0.24	0.24	0.22	0.22	0.18	0.13	0.13	0.12
Pipotiazine	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.05	0.05
Thiopropazine	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.002	0.002	0.002
Thioridazine	0.39	0.40	0.42	0.43	0.45	0.45	0.48	0.47	0.44	0.41	0.39	0.35
Trifluoperazine	0.07	0.07	0.08	0.09	0.10	0.11	0.12	0.11	0.10	0.10	0.10	0.09
<b>Butyrophenones</b>												
Haloperidol	0.67	0.75	0.84	0.94	1.03	1.03	1.05	1.04	1.11	1.10	1.06	0.55
<b>Thioxanthenes</b>												
Zuclopentixol					0.01	0.06	0.10	0.13	0.15	0.17	0.18	0.19
Flupentixol	0.86	0.82	0.80	0.76	0.72	0.70	0.68	0.65	0.41			
<b>Orthopramides</b>												
Sulpiride0.11	0.11	0.12	0.13	0.14	0.16	0.17	0.18	0.18	0.18	0.18	0.19	
Tiapride0.05	0.05	0.05	0.04	0.02	0.02	0.04	0.03	0.03	0.02	0.02	0.02	
<b>Others</b>												
Clotiapine	0.16	0.17	0.19	0.21	0.23	0.24	0.27	0.28	0.30	0.32	0.32	0.34
Loxapine	0.009	0.007	0.006	0.005	0.005	0.004	0.003	0.002	0.001	0.002	0.001	0.001
Pimozide	0.04	0.05	0.06	0.07	0.08	0.08	0.09	0.08	0.07	0.07	0.07	0.07
Total	3.31	3.41	3.61	3.77	3.93	4.00	4.18	4.17	3.93	3.39	3.35	2.77

those used most at the onset of the nineties (from 1990 to 1993) were butyrophenones and phenothiazines, while the consumption of the atypical drugs since their introduction in the market (in the year 1993) has increased in such a way that in the year 2001, they were already the most consumed, above the typical ones. Although the consumption of antipsychotics has increased in our setting, it is still less than in the Scandinavian countries-between 6.3 and 13.6

DID in the year 1998<sup>16-19</sup> and it is similar to that of Australia<sup>20</sup>, Scotland<sup>21</sup> and Germany<sup>22</sup>. However, a common finding is that a change in the consumption pattern of the antipsychotics that shifts from the classical to the atypical agents is observed in all parts<sup>16-23</sup>.

The results of our study coincide with those of a recent study, that was developed almost simultaneously with ours

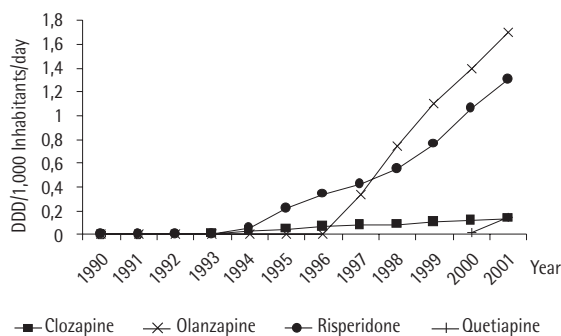
Drug	1993	1994	1995	1996	1997	1998	1999	2000	2001
Clozapine	0.004	0.03	0.05	0.06	0.07	0.08	0.10	0.12	0.13
Olanzapine					0.34	0.75	1.10	1.38	1.69
Risperidone		0.06	0.22	0.34	0.42	0.55	0.77	1.06	1.30
Quetiapine								0.01	0.15
Sertindole					0.002	0.04	0.0007		
Total	0.004	0.09	0.27	0.40	0.83	1.42	1.97	2.57	3.27



**Figure 2** Evolution of most consumed typical antipsychotics.

and that evaluated the consumption of the antipsychotic drugs in all the Spanish state from the year 1985 to the year 2000<sup>12</sup>. The evolution of antipsychotic consumption and the use pattern changes in Catalonia have always been similar to those that have been observed in all of Spain (table 6). However, they are some small differences, as, for example, a greater consumption of flupentixol, marketed in a pharmaceutical specialty that also has a tricyclic antidepressant, in Catalonia during the first years of the decade of the nineties (around 0.80 DID) in comparison with all of Spain (approximately 0.28 DID). There is also a lower consumption of perphenazine during the same period in Catalonia (approximately 0.20 DID) compared with Spain (approximately 1 DID).

Since the introduction of the new atypical antipsychotics in the market, an increase in consumption of all the antipsychotics has been observed, although, in recent years, there has been a tendency to decreased consumption of the typical ones. These consumption data may suggest that since the new antipsychotics have been marketed, there is a greater number of patients diagnosed and treated with these drugs, that there is a greater number of patients treated with drug combinations or that use higher doses. The perception of a lower toxicity of atypical antipsychotics could explain why patients with a milder disorder who were not previously treated are now treated. However, the present consumption



**Figure 3** Evolution of most consumed atypical antipsychotics.

Year	Cost of typical antipsychotics	Cost of atypical antipsychotics	Total cost
1990	2,318,498.24		2,318,498.24
1991	2,483,060.59		2,483,060.59
1992	2,912,758.88		2,912,758.88
1993	2,783,479.82	20,622.87	2,804,102.69
1994	2,866,713.48	801,507.46	3,668,220.94
1995	3,002,574.98	2,474,647.15	5,477,222.13
1996	3,203,718.40	3,620,939.25	6,824,657.65
1997	3,210,221.17	8,302,663.26	11,512,884.43
1998	2,923,362.93	14,656,206.48	17,579,569.41
1999	2,532,721.65	17,532,151.06	20,064,872.71
2000	2,580,570.09	23,043,414.67	25,623,984.76
2001	2,428,196.19	27,020,300.23	29,448,496.42
Total cost period	33,245,876.40	97,472,452.30	130,718,328.85

study does not make it possible to identify which patients are treated nor how these patients are treated, so that it would be of interest to develop future specific studies performed in our setting in order to analyze and characterize the patients treated with different antipsychotic drugs.

The differences in consumption between the different atypical antipsychotics should also be emphasized because the increase in consumption of olanzapine and risperidone was much greater than that of clozapine, quetiapine and sertindole. The lower consumption of clozapine is related

Year	DDD cost of the typical antipsychotics	DDD cost of the atypical antipsychotics	DDD cost of the antipsychotics
1990	6.48		6.48
1991	6.83		6.83
1992	7.56		7.56
1993	7.02	2.06	9.08
1994	8.75	6.68	15.43
1995	8.90	6.60	15.50
1996	7.72	6.39	14.11
1997	7.67	17.60	25.27
1998	7.36	16.57	23.93
1999	7.07	13.80	20.87
2000	4.97	16.58	21.55
2001	4.62	15.69	20.31

**Tabla 6** Consumption of antipsychotic drugs in Catalonia and in Spain

Year	Consumption of typical*		Consumption of atypical*		Total consumption*	
	Catalonia	Spain	Catalonia	Spain	Catalonia	Spain
	1990	3,31	4,81			3,31
1991	3,41	4,08			3,41	4,08
1992	3,61	4,32			3,61	4,32
1993	3,77	4,35	0,004	0,005	3,77	4,36
1994	3,93	4,53	0,09	0,09	4,02	4,62
1995	4,00	4,47	0,27	0,25	4,27	4,72
1996	4,18	4,48	0,40	0,39	4,58	4,87
1997	4,17	4,14	0,83	0,78	5,00	4,92
1998	3,93	3,96	1,42	1,30	5,35	5,26
1999	3,39	3,14	1,97	1,76	5,36	4,90
2000	3,35	3,08	2,57	2,36	5,92	5,44
2001	2,77	2,92	3,27	2,89	6,04	5,81

\* Expressed in DHD.

with the development of a specific monitoring program because it is a drug with special medical control and, above all, with the marketing of olanzapine and risperidone, as the Santamaria et al. study<sup>12</sup> suggests. In relationship with the changes in the antipsychotic use pattern, it is interesting to stress the controversy related with the use of the new atypical antipsychotics. On the one hand, it has been suggested that the atypical antipsychotics are better tolerated than the classical ones by the patients because they cause less dyskinesias and extrapyramidal effects<sup>6,24</sup>. On the other hand, it has been indicated that, except for clozapine, they show no advantages in regards to their clinical efficacy<sup>11,25</sup>, that variable doses of the atypical drugs have been compared with fixed and relatively high doses of haloperidol<sup>26</sup>, that they more frequently present other undesirable effects such as weight increase<sup>24,27</sup> and hyperglycemia<sup>24,28</sup>, and that they have higher costs than the classical ones<sup>11</sup>. In this sense, the results of a recent comparative clinical trial between olanzapine and haloperidol together with an anticholinergic are illustrative<sup>11</sup>. This did not show differences in treatment compliance, positive or negative symptoms of schizophrenia, extrapyramidal symptoms or global quality of life of the patients. However, in the olanzapine treated patients, a reduction of akatisia and improvement of the motor and cognitive function of the patients were observed, although weight increase and noticeable increase in the costs in comparison with the association of haloperidol and an anticholinergic were also observed.

One contribution of our study was the analysis of the economic consequences of antipsychotic consumption. Our results indicate that the cost of antipsychotics has increased by almost 130%, above all as a consequence of the greater

cost of the new atypical antipsychotics, which is about five times greater than the classic or typical antipsychotics. In addition, in the year 1993, the atypical antipsychotics represented less than 1% of the total cost and total consumption, while in the year 2001, they generated more than 90% of the total cost and 54% of the total consumption. This surprising increase in the cost of antipsychotics and, especially of the atypical ones, has also been described by Stark et al.<sup>21</sup> in Scotland, with an increase in total cost of 155% in the period of 1994 to 1997, at the expense of the new antipsychotics (90% of the cost). These results pose the question of whether the magnitude of the differences in the benefit/risk ratio between the typical and atypical antipsychotics justify the differences of economic costs, and, as a consequence, the large increase in costs. Furthermore, it should be kept in mind that, in the next years, the marketing of other new atypical antipsychotics, such as amisulpride, aripiprazole, ziprasidone and zotepine may increase the total cost even more.

Among the limitations of the study, those related with the source of the data identification must be stressed. The ECOM database of the Ministry of Health and Consumer Affairs only includes the consumption data of the medicinal products dispensed in pharmacy offices charged to the Social Security and do not include prescriptions made for the beneficiaries of other insurance entities nor the data of direct sale, although this consumption may possibly represent a reduced proportion of total consumption. It should also be stated that the data analyzed correspond to the sales of the drugs and not to the real consumption or use made of them by the patients and, on the other hand, the DDD is also not representative of the dose consumed. In addition, it was not possible to analyze the consumption data of some of the new drugs (for example, ziprasidone) because its marketing was after the period studied. However, these limitations do not invalidate the study conclusions, although future studies will be necessary to know better the long term evolution of these drugs and to analyze the consumption of the new drugs that are already on the market but that have not been evaluated in our study.

In conclusion, the results indicate that there is an increase in consumption of the antipsychotic drugs and changes in the consumption pattern during the time in Catalonia (similar as in the whole of Spain) and that the marketing of the new atypical antipsychotics have had an extraordinary impact both on consumption as well as on the cost of this group of drugs. Thus, these data are a reason for reflexion and debate on the place of the therapeutics of the new atypical antipsychotics and on the economic resources that are allocated to the cost of these drugs.

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