



Brief report

Anticholinergic drugs and cognitive impairment in the elderly[☆]

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ARTICLE INFO

Article history:

Received 26 July 2017

Accepted 11 January 2018

Available online xxx

Keywords:

Cholinergic antagonists

Cognition

Dementia

Polypharmacy

ABSTRACT

Objective: Describe the prevalence of the anticholinergic drugs (AD) used in patients who consult in regard to loss of memory. Assess the cognitive and functional repercussion of these drugs.

Patients and methods: Retrospective review of the clinic history of the patients who consulted the clinic in 2015 and 2016. We used the Anticholinergic Cognitive Burden Scale. We explored cognition with the Mini Mental State Examination (MMSE) and function with the Barthel Index and the Lawton and Brody Scale. We compared the difference of scale scores between the patients exposed and not exposed to AD. **Results:** Sample size of 610 patients (mean age = 81.1 years), 71% female. 37.2% of patients took AD. The mean (SD) difference between exposed and not exposed patients and the year-on-year worsening rate of the Barthel Index and the Lawton and Brody Scale and MMSE were -4 (4.5), -0.3 (0.4) and -1 (0.9), respectively.

Conclusions: One third of patients who consulted for cognitive loss are taking AD. Patients exposed to AD show a greater tendency to impairment.

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Fármacos anticolinérgicos y deterioro cognitivo en el anciano

RESUMEN

Objetivo: Describir la prevalencia de uso de fármacos anticolinérgicos (FA) en pacientes de edad avanzada que consultan por pérdida cognitiva. Valorar la repercusión cognitiva y funcional de estos fármacos.

Pacientes y métodos: Revisión retrospectiva de historias clínicas de pacientes visitados en 2015 y 2016. Se identificaron FA con la *Anticholinergic Cognitive Burden Scale*. La función cognitiva se exploró mediante el *Mini Mental State Examination* (MMSE) y la funcional con el índice de Barthel y el índice de Lawton y Brody. Se comparó la diferencia de las puntuaciones de las escalas en un año entre los pacientes expuestos a anticolinérgicos con los no expuestos.

Resultados: Muestra de 610 pacientes (edad media = 81,1 años), 71% mujeres. El 37,2% estaban tomando algún FA. La diferencia media (desviación estándar [DE]) de los expuestos respecto a los no expuestos, el empeoramiento anual en el índice de Barthel, en el índice de Lawton y Brody y en el MMSE fue de -4 (4,5), -0,3 (0,4) y -1 (0,9), respetivamente.

Conclusiones: Un tercio de los pacientes que consultan por pérdida cognitiva están tomando algún FA. Los pacientes expuestos muestran una tendencia mayor a empeorar funcionalmente.

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Palabras clave:

Antagonistas colinérgicos

Cognición

Demencia

Polifarmacia

[☆] Please cite this article as: López-Matons N, Conill Badell D, Obrero Cusidó G, Gil Saladié D, Padrós Selma J, Martín-López A. Fármacos anticolinérgicos y deterioro cognitivo en el anciano. Med Clin (Barc). 2018. <https://doi.org/10.1016/j.medcli.2018.01.014>

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Introduction

The prescription of drugs increases in the elderly population. This fact increases the risk of exposure to inappropriate medication and unwanted interactions. Some drugs, such as anticholinergic drugs (AD), can influence cognitive function.^{1,2}

Adverse effects associated with AD occur in the peripheral³ and the central nervous system, which may affect cognition,^{1,4} functionality,⁵ increase the risk of falls,¹ dementia² and even be associated with an increased mortality.¹

Despite these effects, AD prescription in the elderly population is high. 40% of this population take drugs of this type, which can increase to 60% in patients affected by dementia.⁴

The main objective of this study is to describe the prevalence of AD use in patients who present with cognitive loss. As secondary objectives, describe the concomitant use of AD and cholinesterase inhibitors (acetylcholinesterase inhibitors [AChEI]) and assess the cognitive and functional impact of AD.

Patients and methods

Retrospective study carried out in the Comprehensive Geriatric Assessment Unit of the GrupMutuam, a multidisciplinary resource of the Public Health Network in Barcelona that treats elderly people referred from primary care.

To estimate the prevalence of patients who were undergoing treatment with AD, a review of the medical records of all patients over 60 years of age that were visited during 2015 and whose reason for referral was cognitive loss was carried out. A database was prepared, and the prescribed drugs were registered, highlighting AD and AChEI. To identify AD with central effect, the *Anticholinergic Burden Scale* (ACB)⁶ was used, and AD were classified into three groups (1, 2 and 3), according to this scale, with those in groups 2 and 3 having the highest scientific evidence. This scale can be consulted on the web.⁷

To assess the impact of AD on cognition and functionality, the medical records of patients assessed in 2015 and re-evaluated in 2016 were selected using functional (Barthel index [BI] and Lawton and Brody index [LBI]) and cognitive assessment scores (*Mini Mental State Examination* [MMSE] cognitive screening test by Folstein).

The statistical analysis was performed with the IBM SPSS Statistics version 19 software. For the descriptive analysis, the prevalence and confidence intervals of the patients visited who were under treatment with AD and AChEI were calculated.

To assess the effect on cognition and functionality, patients were classified into two groups: those who had been exposed to AD in 2015 and/or 2016, and those who had not. The difference in score obtained from the scores in 2016 minus 2015 was calculated. Sociodemographic data (age and sex) and other covariates related to the medical history were recorded (body mass index [BMI], smoking, hypertension, diabetes mellitus, dyslipidaemia, diagnosis of dementia and history of heart disease or stroke). To determine if there were differences in the scores calculated between exposed and unexposed patients, a linear regression analysis both adjusted and unadjusted for covariates was performed.

Results

A total of 610 patients visited in 2015 fulfilled the inclusion criteria. The mean age was 81.1 years (standard deviation [SD]=7.3) and 71% were women. 37.2% were taking at least one AD (95% CI: 33.5–35.6%): 26.4%, one, and 10.8%, more than one (up to 4). Fig. 1 shows the percentages of patients under treatment with AD according to the group and the total number of drugs they take.

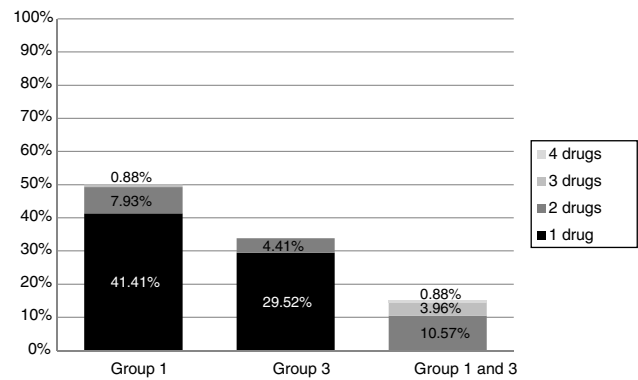


Fig. 1. Patients on AD treatments, percentage by group according to ACB scale and total number of drugs taken. Group 1: percentage of patients taking 1, 2 or 3 drugs exclusively from group 1 according to the ACB scale. Group 3: percentage of patients taking 1 or 2 drugs exclusively from group 3 according to the ACB scale. Groups 1 and 3: percentage of patients taking 2 to 4 drugs, at least some of group 1 and group 3 according to the ACB scale.

The most commonly prescribed AD were antipsychotics (39.7% of the patients in AD treatment were taking at least one of these), antidepressants (33.5%), antimuscarinics used in urologic disorders (12.3%), analgesics (7, 9%) and antihistamines (1.3%).

Of the 95 patients who were under treatment with AChEI, 43.2% were in treatment with some AD (95% CI: 33.7–53.2%): 27.4%, one, and 15.8%, more than one (up to 3).

The prevalence ratio of patients with AD in treatment with AChEI versus non-AChEI is 1.2 (95% CI: 0.9–1.6). Considering only the AD of group 2 or 3 (more scientific evidence of anticholinergic effect), this ratio increases to 1.5 (95% CI: 1–2.2) and considering the total number of drugs taken (one vs more), this ratio also increases to 1.3 (95% CI: 0.9–2.1).

A total of 126 patients were assessed and reassessed in 2015 and 2016 with cognitive screening and functional assessment scores. Regarding the distribution of sociodemographic variables and covariates, significant differences were found in the distribution of patients with arterial hypertension and coronary disease, being more common in the exposed group ($p < 0.05$). These distributions are shown in Table 1.

The average of the differences in the BI, LBI and MMSE scores of 2016 minus 2015 in the exposed group was -5.9 (SD: 16.8), -1.2 (1.8) and -1.4 (3.8). For the non-exposed group, it was -1.6 (1.9), -0.9 (1.8) and -0.6 (2.9), respectively. Although the exposed group shows greater worsening, these differences are not significant. Table 2 shows the adjusted and unadjusted average difference of these scores between the two groups.

Discussion

We were able to observe that one third of the patients were under treatment with AD in our study. This percentage is slightly lower than that observed in other studies.⁴ In order to classify drugs as anticholinergics, we have used a scale developed in the United States, which has the most popular anticholinergic drugs in that country but does not include some commonly prescribed in Spain, with known anticholinergic action. This prevalence may be greater than that described.

As described in other studies,⁴ we have observed a higher prevalence of patients under treatment with AD among those suffering from Alzheimer's and in treatment with AChEI. Not only are there more patients on AD treatments, but the prescribed AD have a higher anti-cholinergic burden. The fact that these patients are more sensitive to anticholinergic action⁸ and that the AChEI

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