Comment on : Decrease of anticholinergic drug use in nursing home residents in the United States

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Comment on: Decrease of Anticholinergic Drug Use in Nursing Home Residents in the United States, 2009 to 2017

Changes in the use of anticholinergic drugs depend on the criteria

To the Editor: We read the article by Malagaris and colleagues[1] with great interest. They showed a significant decrease in prescriptions of drugs with high anticholinergic potential defined by the Anticholinergic Cognitive Burden (ACB) scale[2] in nursing home (NH) residents over time. In our previous study, we observed a stable or even an increasing trend in anticholinergic drug use defined by the Anticholinergic Risk Scale (ARS)[3] in a Finnish long-term care population from 2003 to 2017.[4] Due to the well-known differences between the various anticholinergic criteria, we wanted to further explore whether using the ACB scale[2] would affect our results in this population and what might be the reasons behind the different temporal pattern.

Methods

Data from our previous study were used.[4] Altogether 4297 residents in NHs (years 2003, 2011, and 2017) and 4565 residents in assisted living facilities (ALFs) (years 2007, 2011, and 2017) in Helsinki participated. Residents' medication was a point prevalence on the data collection date. The use of drugs with high anticholinergic potential was identified by the ACB scale[2] and further categorized according to their therapeutic class as suggested.[1]

The unadjusted hypothesis of linearity was tested using the Cochran–Armitage test or analysis of variance with an appropriate contrast. The adjusted hypothesis of linearity (orthogonal polynomial) was evaluated using generalized link models (e.g., analysis of covariance and logistic models) with appropriate distribution and link function. Models included age, sex, Charlson Comorbidity Index[5], and mobility as covariates.

Results

In all cohorts, most of the residents were female and the mean age was around 84 years. A dementia diagnosis and dependency in mobility became more prevalent over time. There was no significant trend in the proportion of users of anticholinergic drugs in NHs from 2003 to 2017, but in ALFs an increasing trend was observed from 2007 to 2017. Antipsychotics and antidepressants were the most prevalent drug classes with high anticholinergic burden. The proportion of users of ACB antipsychotics increased in both facilities over the years. In contrast, the use of ACB antidepressants practically disappeared in both NHs and ALFs, and the same pattern was observed in the use of urinary antispasmodics and hydroxyzine. (Table 1)

Discussion

The use of drugs with high anticholinergic potential according to the ACB remained stable or even increased over the years. This happened even though many ACB drugs are no longer available in Finland. Furthermore, there was a significant increase in the antipsychotic use, which is worrisome considering that the residents commonly had cognitive impairment. Our results markedly differed from those of Malagaris and colleagues, as they found an overall decreasing trend in anticholinergic prescriptions irrespective of therapeutic class. The recently published UK study among older people showed a significant increase in the prevalence of anticholinergic drugs over 20 years.[6]

Our study investigating the prevalence of anticholinergic drug use is not directly comparable with the study of Malagaris and colleagues focusing on the prescription rates. However, some points of discussion may be raised. The various anticholinergic criteria define anticholinergic drugs and their anticholinergic potential differently, resulting in varying prevalence rates and predicted outcomes.[7-9]

Even one single commonly used drug may have a significant effect on the anticholinergic use observed, as we showed in our previous study in which the increased use of mirtazapine was mainly responsible for the overall increasing trend in antidepressant use over the years.[4] The ACB scale

does not include mirtazapine in drugs with high anticholinergic potential, which likely explains the low and even decreasing prevalence of antidepressant use in our present study. The increase in dementia diagnoses and possible related neuropsychiatric symptoms in the latter cohorts is likely to, at least partly, be the explanation behind the increasing prevalence of antipsychotics, despite guidelines advising non-pharmacological treatment. Furthermore, unlike several other criteria[9], quetiapine is defined as high anticholinergic according to the ACB scale. Quetiapine explains most of the increase in the use of antipsychotics. Old neuroleptics have practically disappeared from the drug lists of our latest cohorts.

Even a moderate anticholinergic burden has been shown to have an association with poor outcomes in older, cognitively frail people.[10] By excluding drugs with lower anticholinergic potential and measuring exclusively the use of high potential drugs, the results might appear to be an underestimation of the true anticholinergic burden.

Despite extensive research on anticholinergic drugs, so far there is a lack of clear evidence regarding which anticholinergic scale would be optimal and how to best recognize the most deleterious anticholinergic drug use or burden as regards the clinical outcomes.

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Table 1. Characteristics of residents in nursing homes (in 2003, 2011, and 2017) and assisted living facilities (in 2007, 2011, and 2017).

Characteristics of residents	Nursing home			P for trend		Assisted living facility			P for trend
	2003 (n=1979)	2011 (n=1568)	2017 (n=750)			2007 (n=1336)	2011 (n=1556)	2017 (n=1673)	
Females, n (%)	1597(81)	1209(77)	580(77)	0.013		1041(78)	1217(78)	1210(72)	<0.001
Mean age, years (SD)	84(8)	85(8)	84(8)	0.34		83(7)	84(7)	84(8)	0.006
Dementia, n (%)	1374(69)	1188(77)	581(78)	<0.001		798(60)	1090(70)	1302(78)	<0.001
Bed- or wheelchair-bound, n (%)	598(30)	947(60)	427(57)	<0.001		195(15)	446(29)	508(30)	<0.001
Mean CCI (SD)	2.1 (1.2)	2.4(1.5)	2.1(1.3)	0.39		2.1(1.4)	2.4(1.5)	2.0(1.3)	0.001
Mean number of regularly used drugs (SD)	7.9(3.5)	7.3(3.3)	8.3(3.3)	0.94		8.3(3.5)	8.8(3.8)	9.0(3.7)	<0.001
Users of anticholinergic drugs[b], n (%)	501(25)	277(18)	156(21)	0.17[a]		247(18)	330(21)	344(21)	0.010[a]
Users of antipsychotics[b], n (%)	240(12)	245(16)	151(20)	<0.001[a]		161(12)	288(19)	331(20)	<0.001[a]
Users of antidepressants[b], n (%)	96(5)	13(1)	2(0)	<0.001[a]		36(3)	15(1)	11(1)	0.004[a]
Users of gastrointestinal drugs or antiemetics[b,c], n (%)	17(1)	0(0)	0(0)	*		0(0)	1(0)	0(0)	*
Users of anti-Parkinson drugs[b], n (%)	7(0)	0(0)	0(0)	*		0 (0)	0 (0)	0 (0)	*
Users of urinary antispasmodics[b], n (%)	60(3)	2(0)	0(0)	*		31(2)	10(1)	0(0)	*
Users of hydroxyzine, n (%)	142(7)	26(2)	4(1)	<0.001[a]		30(2)	26(2)	6(0)	<0.001[a]

Data are expressed as n (%) unless otherwise specified.

CCI = Charlson Comorbidity Index[5]; SD = standard deviation

* Not applicable; [a] adjusted for age, sex, dementia diagnosis, and mobility; [b] high (score 3) anticholinergic drugs defined by the Anticholinergic Cognitive Burden (ACB) scale[2]; [c] including scopolamine, hyoscyamine, or promazine