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Gibson W[1], Wagg A[1], Hunter K[1]
1. *University of Alberta*

MEASURING GAIT VARIABLES USING MOTION CAPTURE IN OLDER WOMEN WITH URINARY URGENCY: A PILOT STUDY.

Hypothesis / aims of study

The pharmacological mainstay of OAB treatment consists of antimuscarinic medication. However, the use of anticholinergic medications is associated with important potential side effects. There is an association with continuing anticholinergic drug exposure, cognitive impairment and risk of incident dementia in community dwelling older people [1]. However, there is some inconsistency in the data. For example, in those with a dementia diagnosis, anticholinergic medications do not appear to exhibit the same relationship with cognition [2] and bladder antimuscarinics do not appear to be associated with impaired cognition or delirium in nursing home residents [3]. The aim of this study was to examine the association of anticholinergic burden on cognitive and physical function, including bladder and/or bowel incontinence and toileting independence, in people referred to an ambulatory seniors' clinic.

Study design, materials and methods

Retrospective exploratory chart audit of two sample sets of older adults seen in a multi-physician specialty geriatric assessment clinic. The initial sample consisted of n=100 consecutive patients referred for cognitive assessment seen between January 1, 2011 and April 19, 2011. A second sample N=100 of only patients with a prior diagnosis of dementia, seen between January 1, 2011 and May 9, 2011, was also selected to compare to those referred for cognitive assessment.

Data on age, sex, Mini Mental Status Exam (MMSE) and Montreal Cognitive Assessment (MOCA) and medication history at the time of assessment were abstracted from clinic records. Data were used to calculate scores on the Anticholinergic Risk Scale (ARS) a measure of patient exposure to anticholinergic medication. In addition, the Charlson Comorbidity Index (CCI) was calculated to compare the burden of comorbidity and Barthel Index (BI) to provide a measure of physical function in activities of daily living (ADL) including bladder and bowel incontinence and assistance with toileting. Geriatrician recommendations to reduce or increase dosage or quantity of anticholinergic medications were recorded as were alterations made to patient medications resulting from the cognitive assessment.

Descriptive statistics were used to summarise the data. Data from each sample was split into users and non-users of anticholinergic medication based on the ARS and compared by the non-parametric Wilcoxon Mann-Whitney U Test as samples were not normally distributed. The Spearman test for non-parametric, continuous variables was used for correlations between anticholinergic and cognitive/physical function variables.

Results

There were no significant differences in age, sex distribution, medication numbers, anticholinergic risk scale, BI, CCI, MMSE, or MOCA scores between the two groups. Median age was 81 years, and half (50%) of each group were taking medication with anticholinergic effects as identified using the ARS. No statistically significant association was found between the ARS with either MMSE or MoCA in either sample (Table 1). Higher ARS scores were negatively correlated with overall BI scores in both groups (r = -0.18, p= 0.073 and r=-0.18, p=-0.074). Of the individual function items on the BI, only bathing was found to be significantly negatively correlated with both ARS (r = -0.21, p = 0.0323) in the group with established dementia. There were no significant correlations between anticholinergic burden as measured by the ARS and bladder/bowel incontinence of toileting.

Table 1: Correlations between ARS and Cognitive and ADL Function

		ARS associations				
		Spearman correlation Cognitive Assessment Sample N=100			Spearman correlation Established Dementia Sample N=100	
Population Characteristic		r_s (95% CI)	p value		r_s (95% CI)	p value
MMSE		0.02 (-0.18,0.21)	0.86		-0.05 (-0.24,0.15	0.64
MOCA		-0.09 (-0.40, 0.24)	0.6		-0.02 (-0.32,0.27)	0.88
BI		-0.18 (-0.36,0.032)	0.0735		-0.18 (-0.36,0.02)	0.074
	Feeding	-0.15 (-0.34,0.05)	0.1355		-0.15 (-0.34,0.05)	0.1387
	Toileting	-0.09 (-0.29,0.10)	0.351		-0.16 (-0.35,0.03)	0.1016
	Bowel incontinence	-0.15 (-0.34,0.05)	0.132		-0.15 (-0.33,0.05)	0.1445
	Bladder incontinence	-0.13 (-0.32,0.06)	0.1864		-0.08 (-027,0.12)	0.4432
	Bathing	-0.14 (-0.33,0.065)	0.1526		**-0.21 (-0.39,-0.02)**	**0.0323**
	Grooming	0 (-0.20,0.2)	0.9937		-0.10 (-0.29,0.10)	0.3459
	Dressing	-0.06 (-0.26,0.14)	0.5344		-0.14 (-0.33,0.06)	0.1583
	Transfers	0.02 (-0.17,0.22)	0.819		0.02 (-0.17,0.22)	0.8089
	Mobility	0.07 (-0.12,0.27)	0.4677		0.03 (-0.16,0.23)	0.7412
	Stairs	-0.06 (-0.25,0.14)	0.5484		-0.06 (-0.25,0.14)	0.5616
CCI		0.15 (-0.04,0.34)	0.126		0.11 (-0.09,0.30)	0.3

Interpretation of results

In this retrospective study, we found little association between increased anticholinergic burden and either cognitive or ADL function, including continence and toileting. Larger sample sizes may be needed to detect such associations. It may be that any relationship that potentially exists would be better explored prospectively with multiple time point measures to look for change over time. These data cast further doubt upon the association between anticholinergic burden and cognitive impairment

Concluding message

The reported the effect of anticholinergic burden on cognition was not identified our data. Further adequately powered prospective studies of anticholinergic burden on ADL function, including continence and independence in toileting, are needed to determine if a causal relationship exists.

References

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Disclosures

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