ANTIPSYCHOTIC MEDICATION AND ITS RELATIONSHIP WITH BONE MINERAL DENSITY

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BACKGROUND AND AIM:

Previous research has shown patients with schizophrenia to have reduced bone mineral density (BMD)[1] and increased fracture risk[2]. However, less is known regarding the direct effects of antipsychotic treatment. Thus, we aimed to investigate the association between antipsychotic use and bone mineral density (BMD) in a population-based sample of women.

METHODS:

Data were utilised from the 15 year follow-up of the Geelong Osteoporosis Study (GOS), an on-going population-based cohort study[3].

789 women aged 29-92 years provided data and were included in analyses. BMD (g/cm^2) was measured at the spine, hip and total body using dual energy absorptiometry (x-ray). Height was measured to the nearest 0.1cm, and weight to the nearest 0.1kg. Socio-economic status (SES) was determined and information on medication use, and lifestyle (smoking, mobility, and alcohol intake) via questionnaire. Regression analysis were used to test associations, after adjusting for potential confounders including age, weight, height, agents known to affect bone and mobility.

RESULTS:

39 of the 789 (20.2%) women were using antipsychotic medication. Antipsychotic users were less active and more likely to use antidepressant and hormone therapy and drink less alcohol (all p<0.05); otherwise were similar in regards to age, height, weight, SES, smoking status and use of thyroid and bone active medications (Table 1).

Age was an effect modifier in the relationship between antipsychotic use and BMD. Among women aged less than 52 years, adjusted mean BMD for antipsychotic users was 6% lower at the spine [1.305 (1.173-1.437) vs. 1.388 (1.283-1.494), p=0.047] and 6% lower at the femoral neck [0.937 (0.876-0.998) vs. 0.998 (0.980- 1.016), p=0.058] compared to non-users. Associations persisted following further adjustment for alcohol consumption, smoking, SES and medications known to affect bone. There was no relationship detected for women ≥52 years (all p>0.05).

No relationship was detected at the total body (all p>0.05).

CONCLUSION:

These population-based data suggest antipsychotic use is associated with lower BMD in younger but not older women. Further research is required to investigate the underlying mechanisms involved.

Table I: Characteristics of those with and without antipsychotic uses in different age groups, presented as median(IQR), n (%) or mean ± standard deviation.

	All			23-51 years			52-95 years		
	Antipsychotic								
	user	non user	p	user	non user	p	user	non user	p
	n=39	n=750		n=14	n=305		n=25	n=445	
Age (year)	60.5 (44.0-71.6)	56.1 (43.2-67.9)	0.47	38.2 (25.6-46.8)	40.0 (33.5-46.2)	0.31	68.0 (61.8-73.0)	66.1 (58.8-73.0)	0.32
Weight (kg)	72.60 (58.0-94.0)	71.55 (62.3-83.8)	0.69	79.0 (55.75-98.2)	71.0 (61.5-84.6)	0.61	71.0 (61.25-89.4)	71.9 (62.7-83.3)	0.94
Height (cm)	162.37± 7.71	161.98±6.39	0.77	168.34±6.40	164.25±6.03	0.35	158.88±6.17	160.43±6.16	0.24
Smoking (current)	7 (17.9%)	84 (11.2%)	0.203	5 (35.7%)	48 (15.8%)	0.05	2 (8.0%)	36 (8.1%)	0.98
Physically active	15 (38.5%)	546 (73.7%)	<0.001	8 (57.1%)	256 (84.7%)	0.00	7 (28.0%)	290 (66.0%)	0.00
Alcohol intake (g/d)	0.0 (0.0-1.43)	1.43 (0.0-8.57)	0.007	0.7 (0.0-36.8)	1.4 (0.0-5.7)	0.82	0.0 (0.0- 0.0)	1.0 (0.0-1.0)	0.01
Socioeconomic status			0.24			0.17			0.42
Quintile 1 (lowest)	3 (10.7%)	118 (15.7%)		0 (0.0%)	38 (12.4%)		3 (18.7%)	80 (18.0%)	
Quintile 2	5 (17.8%)	79 (10.5%)		2 (16.6%)	28 (9.2%)		3 (18.7%)	51 (11.4%)	
Quintile 3	8 (28.5%)	292 (38.9%)		2 (16.6%)	123 (40.3%)		6 (37.5%)	169 (38.0%)	
Quintile 4	9 (32.1%)	141 (18.8%)		5 (41.6%)	67 (21.9%)		4 (25.0%)	74 (16.6%)	
Quintile 5	3 (10.7%)	120 (16.0%)		3 (25.0%)	49 (16.0%)		0 (0.0%)	71 (16.0%)	
Medication use (current)									
Agents known to affect bone	1 (2.6%)	22(2.9%)	0.90	0 (0.0%)	2 (0.6%)	1	1 (4.1%)	20 (4.5%)	0.93
Hormone therapy	4 (11.4%)	27 (3.7%)	0.02	1 (7.1%)	7 (2.3%)	0.30	20 (4.6%)	3 (14.3%)	0.05
Thyroid agents	1 (2.6%)	52 (7.0%)	0.29	0 (0.0%)	18 (6.0%)	1	1 (4.17%)	34 (7.7%)	0.51
Antidepressants	17 (43.6%)	126 (16.8%)	0.000	7 (50.0%)	36 (11.8%)	0.00	10 (40.0%)	90 (20.2%)	0.01
Femoral neck BMD (g/cm^2)	0.90 ± 0.14	0.92 ± 0.14	0.47	0.95 ± 0.11	1.01 ± 0.12	0.12	0.87 ± 0.15	0.86 ± 0.12	0.66
AP-Spine (g/cm2)	1.18 ± 0.21	1.20 ± 0.18	0.63	1.20 ± 0.20	1.27 ± 0.15	0.23	1.17 ± 0.22	1.15 ± 0.2	0.65
Total body (g/cm^2)	1.15± 0.12	1.13± 0.11	0.59	1.18 ± 0.14	1.18 ± 0.08	0.73	1.13 ± 0.1	1.1 ± 0.1	0.20

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