

2021 Best Research Poster Award

Is there an association between antipsychotic medication use and bone quality?

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INTRODUCTION

Antipsychotic medication is predominantly used in the treatment of schizophrenia and bipolar disorder¹.

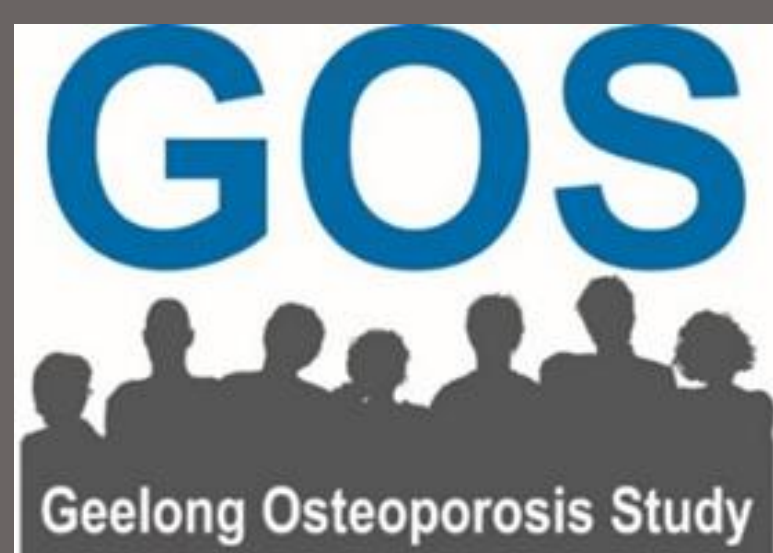
Antipsychotic medication use is increasing globally (including Australia)¹.

It is been reported that antipsychotic use is associated with lower bone mineral density^{2,3}.

However, less is known about the impact of antipsychotic medications on bone quality.

OBJECTIVES

We aimed to investigate the association between antipsychotic use and bone quality in a population-based sample of adults from the Geelong Osteoporosis Study (GOS)



METHOD

Participants:

Antipsychotic users (16 males & 15 females) and age- and sex-matched non-users (80 males & 75 females) were drawn from GOS. This study has been approved by BH: HREC 92/01 women and 00/56 men.

Exposures:

Lifestyle factors and medication use were self-reported. Anthropometry and Socio-economic status (SES) were measured⁴.

Outcome:

Bone quality was determined by Quantitative Ultrasound (QUS) of the left calcaneus and included: Broadband Ultrasound Attenuation (BUA), reflecting microarchitecture and bone density; Speed of Sound (SOS), reflecting elasticity and bone density; and Stiffness Index (SI), which is a combination from BUA and SOS.

Statistical analyses:

Linear regression analyses were used to test cross-sectional associations between bone quality and antipsychotic use, after adjusting for potential confounders.



RESULTS

Antipsychotic users were more likely to smoke and use antidepressants, less active and consumed less alcohol. Otherwise, the groups were similar (Table One).

After adjusting for weight, antipsychotic use was associated with a 6.0% lower in mean BUA [109.8 (103.9-115.6) vs. 116.8 (114.2-119.4) dB/MHz, $p=0.03$] and 7.0% lower in mean SI [91.6 (84.8-98.4) vs. 98.5 (95.5-101.5) %, $p=0.07$] compared to non-users.

No difference observed in SOS between antipsychotic users and non-users ($p=0.29$).

Table One: Characteristics of antipsychotic users and non users (Values are given as median (interquartile range), mean (standard deviation) or n (%))

	Antipsychotic user n=31	Non-users n=155	P
Age (yr)	51.2 (35.9-63.4)	51.3 (37.0-60.9)	0.946
Male (n)	16 (51.6%)	80 (51.6)	
Weight (kg)	84.1 (68.0-98.2)	80.0 (67.8-91.0)	0.239
Height (m)	1.7 ± 8.6	1.7 ± 9.4	0.554
Smoking (current)	10 (32.2%)	17 (11.2%)	<0.001
Physically active	17 (54.8%)	124 (81.0%)	<0.001
Alcohol intake (g/d)	1.0 (0.0-13.7)	6.7 (1.2-20.2)	0.016
SES			0.692
Quintile 1 (lowest)	6 (19.3%)	25 (16.2%)	
Quintile 2	8 (25.8%)	30 (19.5%)	
Quintile 3	6 (19.3%)	44 (28.6%)	
Quintile 4	7 (22.6%)	27 (17.5%)	
Quintile 5	4 (12.9%)	28 (18.2%)	
Medication (current)			
Hormone therapy	0 (0.0%)	3 (1.9%)	0.02
Thyroid agents	0 (0.0%)	11 (7.1%)	0.215
Antidepressants	14 (45.1%)	19 (12.2%)	<0.001
Ca/ Vit D	8 (26.0%)	26 (16.8%)	0.235
QUS parameters			
BUA (dB/MHz)	110.8 ± 23.1	116.9 ± 15.4	0.164
SI (%)	92.4 ± 20.5	98.6 ± 19.1	0.127
SOS (m/sec)	1566.5 ± 35.1	1574.4 ± 40.1	0.272

DISCUSSION

The data showed a negative association between bone quality, as measured by QUS, and the use of antipsychotics in men and women. This association was independent of known factors associated with bone strength, including physical activity, alcohol consumption, smoking, socio-economic status, calcium and vitamin D intake and medications known to affect bone.

Studies investigating bone quality among antipsychotic users in a population-based sample are sparse. Research in this area mainly utilize clinical samples, particularly patient groups with schizophrenia.

CONCLUSION

Use of antipsychotics was associated with lower QUS values. Hence, bone health should be considered when antipsychotics are prescribed.

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ACKNOWLEDGMENT

The authors thank Professor Graham Giles of the Cancer Epidemiology Centre of The Cancer Council Victoria, for permission to use the Dietary Questionnaire for Epidemiological Studies (Version 2), Melbourne: The Cancer Council Victoria 1996. Study data were collected and managed using REDCap electronic data capture tools hosted at Barwon Health.