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INTRODUCTION AND AIM

Bipolar disorder is associated with significant psychological and physical comorbidity. Yet little is known about the bone health of adults with bipolar disorder¹. Thus, we aimed to investigate the association between bipolar disorder and bone quality in a sample of population-based women.

METHOD

Women with a history of bipolar disorder (n=117) were recruited from the Barwon Statistical Division. Controls, women without bipolar disorder, were drawn from the Geelong Osteoporosis Study² (n=909). Bipolar disorder was identified using a semi-structured clinical interview (SCID-I/NP). Bone quality was determined by quantitative heel ultrasound (Achilles Express, GE Medical Systems) and included the following parameters: Speed of Sound (SOS), Broadband Ultrasound Attenuation (BUA) and Stiffness Index (SI). Weight and height were measured and information on medication use and lifestyle were obtained via questionnaire. Linear regression models were used to test associations, after adjusting for age and weight.

RESULTS

Cases were heavier, less active, more likely to smoke, take psychotropic medication and have lower SOS and SI compared to controls (all p<0.003); otherwise the groups were similar in regards to age, height and BUA (Table One).

After adjustment for age and weight, compared to controls, cases had lower adjusted mean:

- SOS [1559.1 (95%CI 1552.4-1565.8) vs 1576.2 (95%CI 1573.8-1578.6) m/sec, p=<0.001]
- BUA [109.2 (95%CI 106.5-111.8) vs 112.8 (95%CI 111.9-113.7) dB/MHz, p=0.01]
- SI [88.7 (95%CI 85.4-92.1) vs 96.6 (95%CI 95.4-97.7) %, p=<0.001]

These associations persisted after further adjustment for smoking, physical activity, alcohol consumption, dietary calcium intake, SES, bone active and psychotropic medications.

CONCLUSIONS

Data from this case control study suggest bipolar disorder is associated with poor bone quality, as measured by QUS, in women. These findings support the growing body of literature that unipolar depression is associated with bone quantity and quality³. Given the dearth of literature, replication and research into underlying mechanisms are warranted.

Table One: Characteristics between cases and controls. Values are given as median (interquartile range), mean (\pm standard deviation) or n (%).

	Cases n = 117	Controls n = 909	p
Age (yr)	48.1 (39.1-57.2)	47.8 (32.4-61.0)	0.975
Weight (kg)	75.5 (65.3-90.2)	70.2 (61.9-82.5)	0.003
Height (m)	1.64 \pm 0.1	1.63 \pm 0.1	0.159
Physical activity (active)	77 (72.0%)	759 (84.2%)	0.003
Smoking (current)	29 (27.1%)	141 (15.7%)	0.003
Alcohol intake (g/d)	3.1 (0.4-11.7)	3.5 (0.4-12.6)	0.820
Calcium intake (mg/day)	833 (589-1066)	864 (658-1076)	0.160
Medication use (current)			
Antiresorptives	1 (0.9%)	16 (1.8%)	0.710
Glucocorticoids	4 (3.4%)	11 (1.2%)	0.081
Hormone therapy	10 (8.6%)	77 (8.5%)	0.978
Psychotropics	107 (91.5%)	135 (14.9%)	<0.001
Unadjusted QUS parameters			
SOS (m/sec)	1564.2 \pm 33.7	1576.3 \pm 36.9	<0.001
BUA (dB/MHz)	111.1 \pm 15.7	113.3 \pm 15.0	0.186
SI (%)	90.6 \pm 18.4	97.5 \pm 18.9	0.001

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