

Intrauterine growth restriction, gestational age, steroidal prophylaxis and breastfeeding influence bone mass in prepubertal children

Annalisa Calcagno¹, Giovanna Pala¹, Anna Elsa Maria Allegri¹, Nadia Fratangeli¹, Maria Grazia Calevo², Maghnie Mohamad¹, Natascia Di Iorgi¹

¹University of Genoa, Endocrine Unit, Institute G. Gaslini, Genova, Italy

²Department of Epidemiology, Biostatistics and Ethical Committee, Institute G. Gaslini, Genova, Italy



Introduction and Objectives

Since preterm survival improves:

- the later in life effects of prematurity are becoming relevant
- the impact of prematurity on skeletal health is not yet well elucidated

Aim of our study:

- to evaluate bone mass in ex-preterm (PT) and born at term (BT) prepubertal children and potential risk factors for bone health.
- to analyse its relations with early risk factors

Methods

	Cases	Controls
Children enrolled	100 PT (42F, 58M)	51 BT (28F, 23M)
Age at evaluation (yrs+SD)	6,7 ± 1,3	6,92 ± 1,37
Gestational Age (GA) (weeks+SD)	31,5 ± 2,6	39,1 ± 1,3
Birth weight (g+SD)	1557,0 ± 543,1	3066,6 ± 429,4
SGA	6%	6%
IUGR	21% (n=21)	11,8% (n=6)
Antenatal steroid (AS)	55%	0
Breastfeeding	20% (n=20)	46,9% (n=23)

Children underwent:

- Anthropometrics
 - height (cm and SDS)
 - weight, BMI (kg/mq, SDS), waist, hips
 - head circumference
- Dual X-ray Absorbiometry evaluations (Lunar Prodigy GE) total body (TB) less head and lumbar spine (L) for:
 - Bone Mineral Density (BMD-g/cm², Z-score*)
 - Bone Mineral Content (BMC-g)
 - TB Fat Mass (FM%,kg)
 - Free Fat Mass (FFM-kg)

*normal data handed from the manufacturer

Results and Conclusions

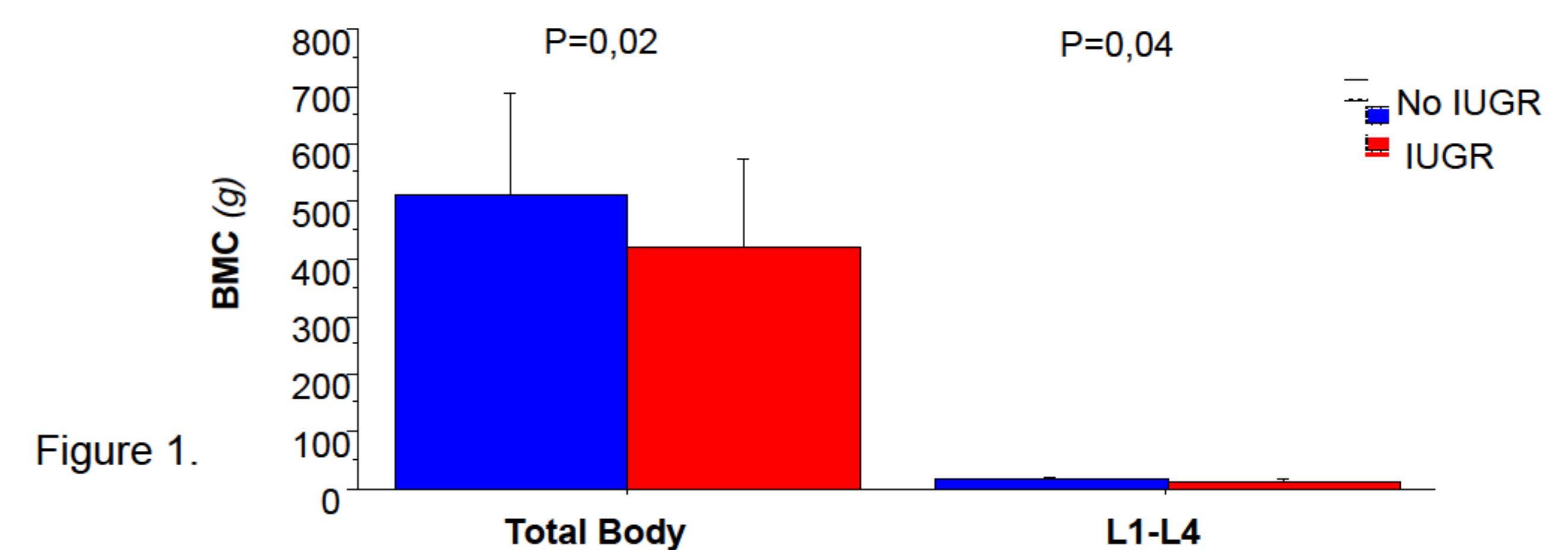


Figure 1.

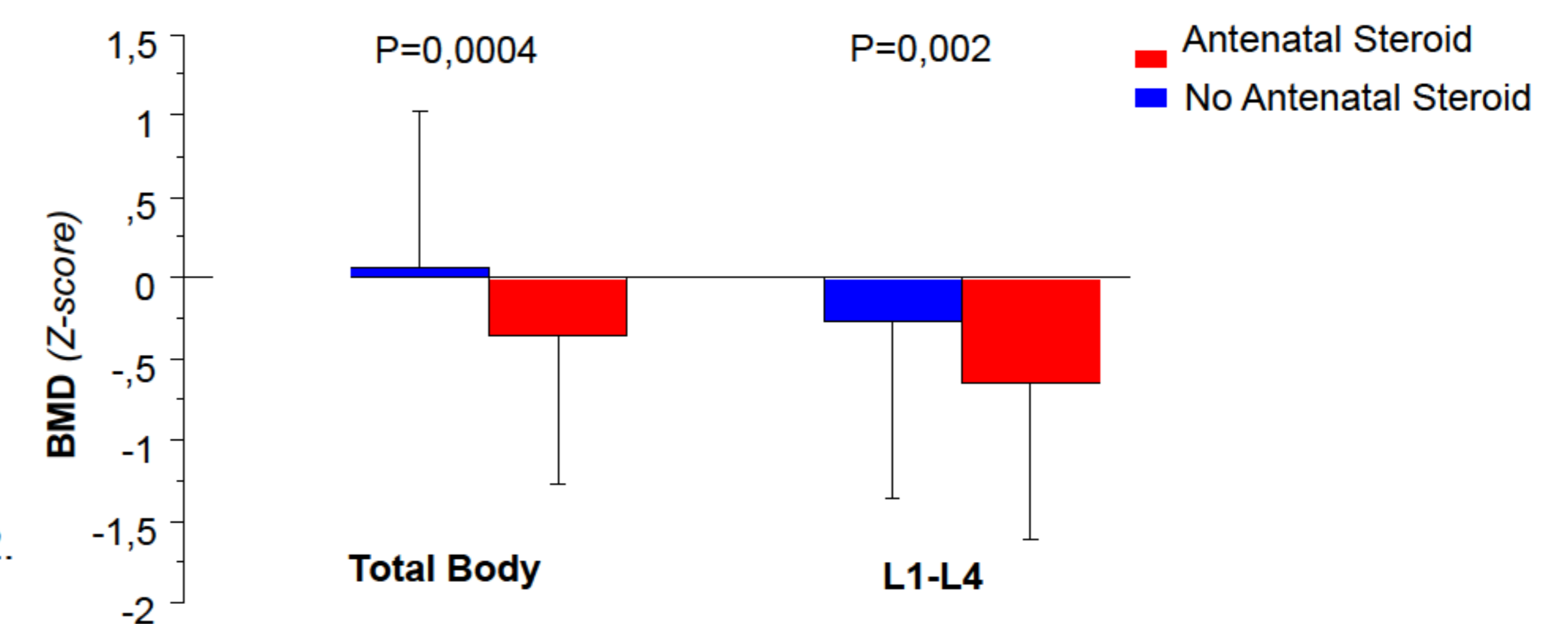


Figure 2.

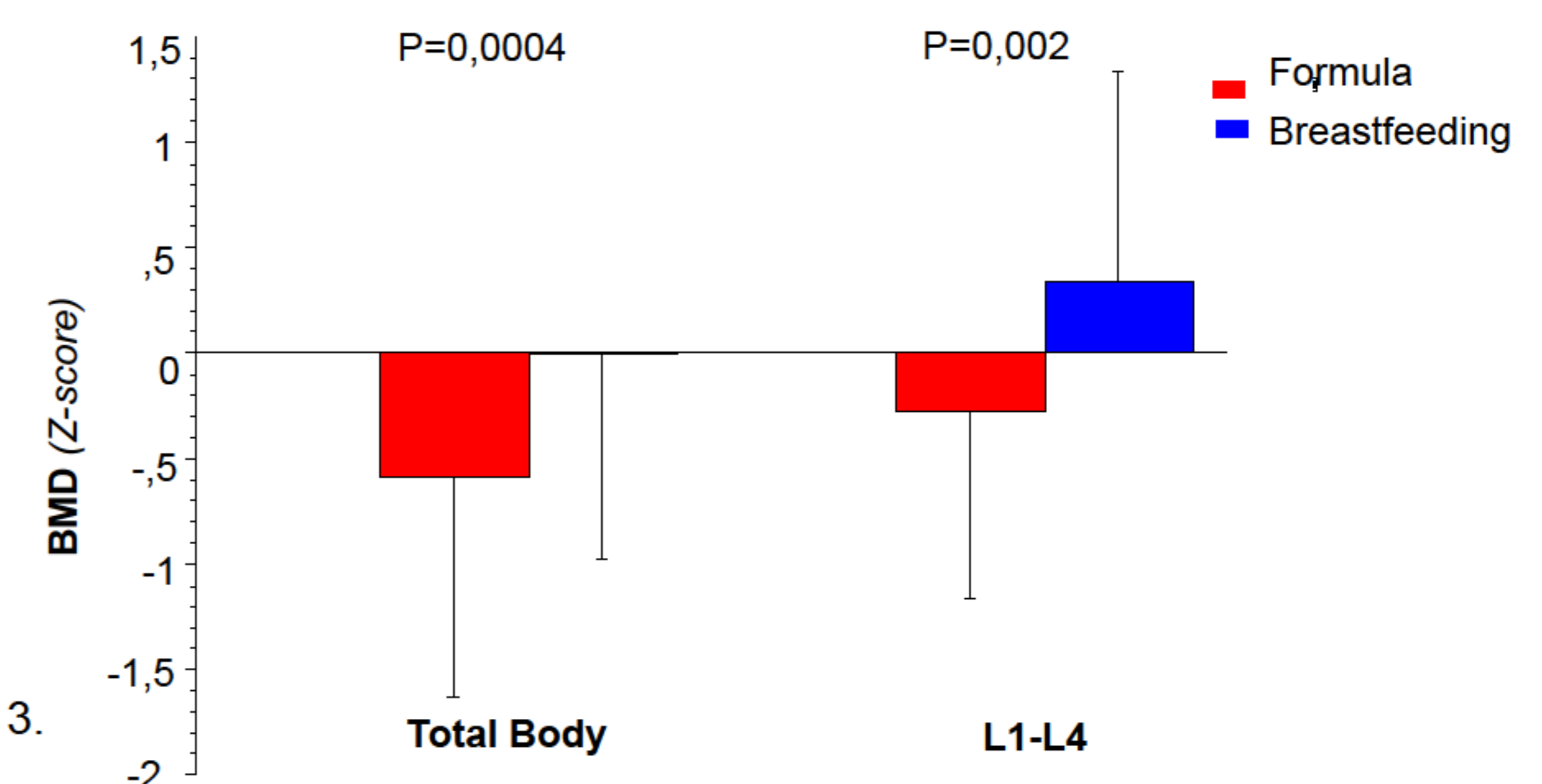


Figure 3.

1. There were no significant differences between PT and BT children in anthropometrics, DXA parameters and bone markers.
2. Positive correlations were found between GA or birth weight and BMC, BMD or BMD Z-score both at the TB and the L1-L4.
3. The IUGR group (17,9%) was shorter and had significantly lower DXA bone measures (all P's <0,05) compared to no IUGR children (Fig.1).
4. AS was negatively (r's between -0,16 and -0,39; all P's<0.04) associated to all bone parameters (Fig.2).
5. Breast feeding was positively (r's between 0,18 and 0,29; all P's<0.02) associated to all bone parameters (Fig.3).

Our study demonstrates:

- comparable bone mass parameters in PT and BT prepubertal children
- breastfeeding seems to have a positive impact on bone parameters
- GA, IUGR and AS might represent long-lasting risk factors for bone health

References

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- 3) Fewtrell MS, Williams JE, Singhal A, Murgatroyd PR, Fuller N, Lucas A. Early diet and peak bone mass: 20 year follow-up of a randomized trial of early diet in infants born preterm. *Bone.* 2009 Jul;45(1):142-9. doi: 10.1016/j.bone.2009.03.657. Epub 2009 Mar 21.

