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Insulin resistance parameters in children who were born very preterm and adequate for gestational age

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Objetive

Very preterm neonates are at risk for metabolic syndrome later in life. Our objective was to compare anthropometric measures and insulin resistance variables between children who were born very preterm (VPT, <32 gestational weeks) and term (T, >37 gestational weeks), and adequate for gestational age (AGA).

Subjects and methods

In this cross-sectional cohort study we recruited 113 children 5.0 to 8.5 years old from the preterm clinic of our institutions: 72 VPT (gestational age = 29 ± 2 weeks) and 41 T (gestational age 39 ± 1 weeks) with a similar socio-economical background. All children presented a Birth Weight Standard Deviation Score (BW-SDS) higher than 2, as calculated using INTERGROWTH21. We measured height, weight and abdominal circumference, and calculated body mass index (BMI) percentiles using WHO references. After overnight fasting, glycemia, insulin, triglycerides and HDL-Cholesterol were determined. We determined the homeostasis model assessment insulin resistance (HOMA-IR) index, the quantitative insulin-sensitivity check index (QUICKI), and the triglyceride to HDL-C ratio (TG/HDL-C).

Results

Table 1: General characteristics of the study population

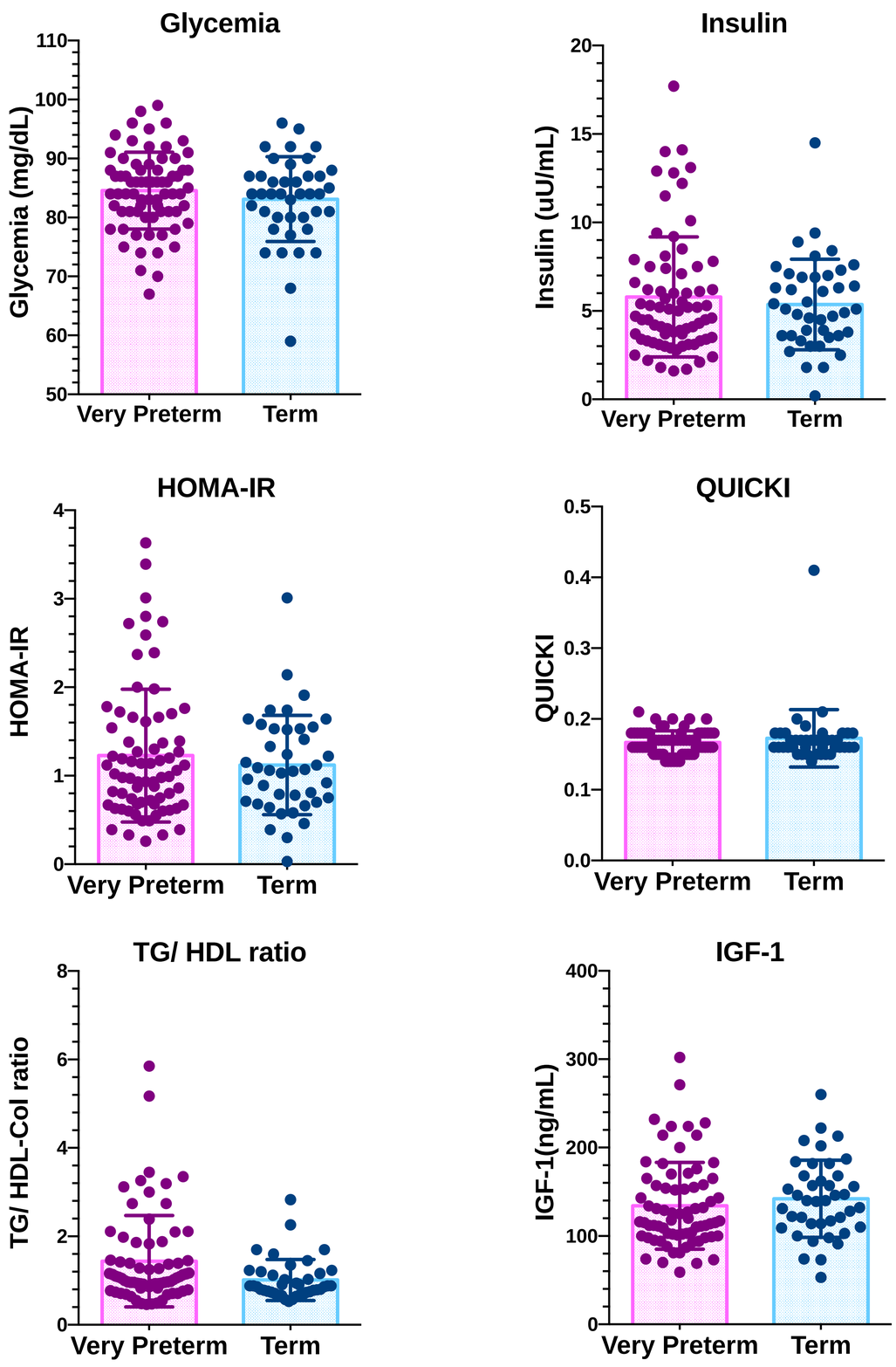
	PRETERM (n=72)		TERM (n=41)		p value
	mean	*SD*	*mean*	*DS*	
Age (years)	6,60	0,90	6,70	1,00	0,535
Bone age (years)	7,20	1,40	7,20	1,30	0,903
Height (SDS)	-0,19	0,86	0,10	1,03	0,109
Abd. circunference (cm)	58,50	7,40	58,50	7,10	0,982
BMI (percentile)	59,00	32,00	64,00	29,00	0,476
Gestational age (weeks)	29,00	2,00	39,00	1,00	<0,001
Birth weigth (SDS)	0,40	1,03	0,52	0,72	0,512
Birth lengh (SDS)	-0,23	1,23	0,56	1,10	<0,001
Systolic BP index	1,04	0,10	1,03	0,08	0,578
Diastolic PB index	1,04	0,12	1,03	0,09	0,803

VPT and T were comparable in chronological age and anthropometrics variables: height-SDS, abdominal circumferences, BMI-percentile, and Birth-Weigth-SDS.

Table 2: Insulin-resistance parameters in children who were born very preterm and adequate for gestational age

	PRETERM (n=72)	TERM (n=41)	p value
Glycemia (mg/dL)	84.54 ± 6.52	83.10 ± 7.19	0.278
Insulin (uU/mL)	5.79 ± 3.39	5.36 ± 2.56	0.485
HOMA-IR	1.23 ± 0.75	1.12 ± 0.56	0.425
QUICKI	0.17 ± 0.02	0.17 ± 0.04	0.269
TG/HDL-C	1.44 ± 1.03	1.01 ± 0.46	0.014

Fig.1: Insulin-resistance parameters in children who were born very preterm and adequate for gestational age



Conclusion

- **At this age, insulin-resistance parameters in children who were born very preterm and adequate for gestational age were not different compared to children born at term.**
- **Nevertheless, TG/HDL-C ratios were higher in VPT which could suggest a potential metabolic risk; therefore, it is essential to follow this group during their lifespan.**

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