

Maternal hemodynamic in twin pregnancy at 20-24 weeks as a predictor of IUGR and gestational hypertensive disorders: a prospective study

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Objective. Twin pregnancy is a risk factor for gestational hypertensive disorders (GHD) and intrauterine growth restriction (IUGR). Cardiac function assessment plays a key role in identification of a singleton pregnancy at risk of developing GHD or IUGR. Maternal hemodynamics show pronounced changes in twin pregnancies. The aim of our study was to evaluate the predictive capacity of hemodynamic assessment to identify twin pregnancies at risk. We compared maternal hemodynamics at 20-24 weeks' gestation between complicated and uncomplicated twin pregnancies also taking into consideration chorionicity.

Materials and Methods. We enrolled 63 monochorionic (MC) and 55 dichorionic (DC) twin pregnancies and we assessed maternal hemodynamics. All cases were followed up until delivery in order to identify patients who would develop selective IUGR, GHD or IUGR of both twins. ANOVA test was used for pairwise comparison. ROC analysis was used to test predictive capacity.

Results. MC who developed sIUGR did not show any difference with an uncomplicated pregnancy. On the contrary, pregnancy with GHD/IUGR showed higher SVR, hypodynamic circulation and reduced LVEDV. SVR > 1123 d.s.cm⁻⁵ (AUC

Monochorionic				
	No complications N: 40	sIUGR N: 15	GHD/IUGR N: 8	P value
SVR	863.65 (189.62)	916.73 (173.62)	1154.25 (161.37)	<0.01 ^{ab}
CO	8.31 (1.71)	8.00 (1.93)	6.94 (1.23)	0.12
INO	2.04 (0.42)	2.06 (0.68)	1.86 (0.39)	0.61
PKR	18.97 (6.68)	20.73 (6.80)	30.12 (7.95)	<0.001 ^{ab}
LVEDV	165.70 (18.39)	159.27 (20.73)	143.12 (13.99)	<0.01 ^a
Dichorionic				
	No complications N: 35	sIUGR N: 12	GHD/IUGR N: 8	P value
SVR	936.60 (165.99)	1020.25 (92.43)	1040.75 (165.66)	0.11
CO	7.51 (1.41)	6.92 (0.87)	6.72 (1.14)	0.18
INO	1.86 (0.34)	1.81 (0.24)	1.71 (0.29)	0.49
PKR	20.66 (5.75)	21.42 (2.87)	22.50 (4.87)	0.64
LVEDV	168.77 (19.15)	168.75 (14.59)	157.25 (20.67)	0.27

0.88), PKR > 19 (AUC 0.86) and LVEDV \leq 163 mm³ (AUC 0.84) showed a significant predictive capacity to identify MC who would develop GHD/IUGR.

We did not show any differences in cardiac function between complicated and uncomplicated DC pregnancies.

Conclusions. MC twins showed a significant cardiovascular effort to sustain the pregnancy request. Pregnancies with reduced preload, high resistance and hypodynamic circulation have a higher risk of developing GHD/IUGR and the evaluation of maternal cardiac function shows significant predictive capacity.