Assessment of maternal hemodynamics in patients with severe obesity: with or without a weight control during pregnancy

Roberta **Frantellizzi** [1], Giulia **Massa** [2,*], Daniele **Farsetti** [1,2], Barbara **Vasapollo** [1], Herbert **Valensise** [1,2]

[1] Department of Obstetrics and Gynecology, Policlinico Casilino, Rome, Italy.
[2] Obstetrics and Gynecology Unit, Department of Surgical Sciences, University of Rome Tor Vergata, Rome, Italy.

DOI: 10.36129/jog.2022.S47

Objective. Maternal weight control during pregnancy plays an important role in the prevention of obstetric and maternal complications. The aims of this study were to evaluate maternal hemodynamics in severely obese pregnancies (BMI > 35) and to evaluate the influence of weight control during pregnancy.

Materials and Methods. 73 severely obese pregnant women were involved in this study, 29 maintained a stable weight or lost weight during pregnancy (group B), 44 patients gained weight (group C); these two groups were compared with 20 normal weight patients (group A). The hemodynamic assessment was performed in the third trimester of pregnancy.

Results. Patients of group C show lower values of SVR (815.4 ± 81.9) than group A and B (948.7 ± 131.8 and 994.8 ± 105.7 respectively) ($p < 0.001$). The CO was higher in group C (8.8 ± 1.4) than group A and B (7.5 ± 1.1 and 7.5 ± 1 respectively) ($p < 0.001$). The CI was significantly higher in group A (4.3 ± 0.6) than group B and C (3.6 ± 0.9 and 3.8 ± 0.4 respectively) ($p = 0.036$). Group C showed lower PKR (17.3 ± 4.6) than group A and B (22 ± 7.1 and 21.6 ± 6.2 respectively) ($p = 0.033$). The INO was significantly lower in group C and B (1.7 ± 0.3 and 1.6 ± 0.3 respectively) than group A (1.9 ± 0.4) ($p = 0.045$).

Conclusions. Our study shows that good weight control or weight loss during pregnancy improves maternal hemodynamics in severely obese patients, bringing them closer to those of patients with a normal weight.

	GROUP A NORMAL WEIGHT (n: 20)	GROUP B OPTIMAL WEIGHT CONTROL (n: 29)	GROUP C POOR WEIGHT CONTROL (n: 44)	P VALUE
SVR d.s.cm^{-5}	948,7 ± 131,8	994,8 ± 105,7	815,4 ± 81,9	<0,001 †‡
CO L/min	7,5 ± 1,1	7,5 ± 1	8,8 ± 1,4	<0,001 †‡
CI L/min/m^2	4,3 ± 0,6	3,6 ± 0,9	3,8 ± 0,4	0,036 †§
HR bpm	89,7 ± 15,8	94,2 ± 15,4	93,5 ± 11,3	ns
SV cm3	88,1 ± 16,3	80,9 ± 14,7	94,2 ± 13,7	0,02 ‡
PKR	22 ± 7,1	21,6 ± 6,2	17,3 ± 4,6	0,033 †‡
TFc ms	377,5 ± 39,8	356 ± 68,3	392,5 ± 39,9	ns
INO W/m^2	1,9 ± 0,4	1,6 ± 0,3	1,7 ± 0,3	0,045 †§
SBP mmHg	116 ± 8,9	126 ± 10,7	120 ± 10,7	0,025 §
DBP mmHg	74,2 ± 7,8	76,6 ± 9,5	73,2 ± 6,9	ns

SVR: Systemic Vascular Resistance; **CO:** Cardiac Output; **CI:** Cardiac Index; **HR:** Heart Rate; **SV:** Stroke Volume; **PKR:** Potential to Kinetic Energy Ratio; **TFc:** Time Flow corrected; **INO:** Inotropy Index; **SBP:** Systolic Blood Pressure; **DBP:** Diastolic Blood Pressure

† group C vs group A; **‡** group C vs group B; **§** group A vs group B