

# Maternal hemodynamic evaluation in anemic patients: a useful tool to possibly prevent maternal-fetal complications

Francesca Pometti <sup>1,\*</sup>, Daniele Farsetti <sup>1,2</sup>, Giulia Gasperini <sup>1</sup>, Barbara Vasapollo <sup>1,2</sup>, Herbert Valensise <sup>1,2</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, Policlinico Casilino, Rome, Italy.

<sup>2</sup>Obstetrics and Gynecology Unit, Department of Surgical Sciences, University of Rome Tor Vergata, Rome, Italy.

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**Objective.** During pregnancy there is a physiological reduction in the hemoglobin value which is the expression of a discrepant increase between the plasma volume and the increase in erythrocyte mass. The purpose of the study was to evaluate the maternal haemodynamics of anemic patients, highlighting any correlations with adverse maternal-fetal outcomes.

**Materials and Methods.** We enrolled 78 anemic patients, with Hb levels below 10.5 g/dL, who underwent a non-invasive hemodynamic evaluation using USCOM at hospital admission. The different parameters were compared with a control group characterized by normal Hb.

**Results.** Anemic patients showed higher HR, TFC, INO, CO and lower RVS, CI than patients with normal values of Hb, as a sign of hyperdynamic circulation (Table 1); while Delivery of Oxygen was the same in both groups.

**Conclusions.** Anemic patients have an hyperdynamic hemodynamics characterized by higher cardiac output and lower

Table 1.

	Hb <10,5 g/dL (n=78)	Hb >10,5 g/dL (n=78)	p-value
Gestational Age	39,2 ± 1,9	38,9 ± 1,5	0,3
DO <sub>2</sub>	1006,5 ± 443,3	994,5 ± 404,5	0,87
HR	92,8 ± 17,7	85,1 ± 12,8	0,002
CO	8,7 ± 2,4	7,6 ± 1,2	<0,01
RVS	830,8 ± 158,7	924,5 ± 149,2	<0,01
CI	3,9 ± 1,1	4,3 ± 0,7	0,007
TFC	389,5 ± 34,5	375,3 ± 29,9	0,007
INO	1,7 ± 0,4	1,4 ± 0,2	0,0001
PAS	110,2 ± 12,5	114,1 ± 8,9	0,03
PAD	69,7 ± 9,9	71,6 ± 7,4	0,176
SV	86,2 ± 20,1	91,2 ± 15,6	0,08
PKR	22,8 ± 11,7	20 ± 6,4	0,07

systemic vascular resistances, guaranteeing a delivery of oxygen comparable to controls despite the low hemoglobin levels. Furthermore, shear stress associated with hyperdynamic circulation could favor endothelial damage, explaining the worsening of maternal-neonatal outcomes, in particular the risk of postpartum hemorrhage.