

EP12.39

Analysis of angiogenic markers sFlt-1 and PlGF in twin pregnancies complicated by pre-eclampsia and fetal growth restriction

Alena Kozhemiakina, Anna Brandejsová, Daniela Vanková, Matus Halaj, Petra Hanulíková, Lubomir Haslik, Hynek Herman, Ladislav Krofta
Third Faculty of Medicine, The Institute for Mother and Child Care (Prague, Czech Republic)

Introduction

Twin pregnancies are associated with an increased risk of pre-eclampsia and fetal growth restriction. sFlt-1/PlGF ratio is a reliable tool for predicting the need for preterm delivery. In twin pregnancies, its interpretation is more challenging due to the higher physiological production of both proangiogenic and antiangiogenic factors.

Objective

Analysis of angiogenic marker levels in a cohort of multiple pregnancies (DC – dichorionic, MC – monochorionic) with an uncomplicated course (controls) vs. multiple pregnancies with complications (complication).

Methods

Prospective cohort study (2020–2025).
Source: The Institute for the Care of Mother and Child (Prague) database.
Total: 285 patients with twin pregnancies
Blood sample analysis: ECLIA
(electrochemiluminescence immunoassay).

Results

Figure 2 presents the angiogenic marker levels in each pregnancy category, stratified by gestational age before and after 33 weeks. Results are expressed as absolute values and as multiples of the median (MoM), with **uncomplicated DC** pregnancies serving as the reference standard for MoM calculation. Figure 3 shows the increase of ratio.

Conclusion

- sFlt-1/PlGF ratio is a valuable tool for risk stratification in twin pregnancies with suspected pre-eclampsy and fetal growth restriction.
- Early gestation – the sFlt-1/PlGF ratio is the strongest discriminatory marker, rather than sFlt-1 alone.
- We have established a MoM-based normative reference for angiogenic markers in DC twin pregnancies. Limitation – small cohort of uncomplicated multiple pregnancies.

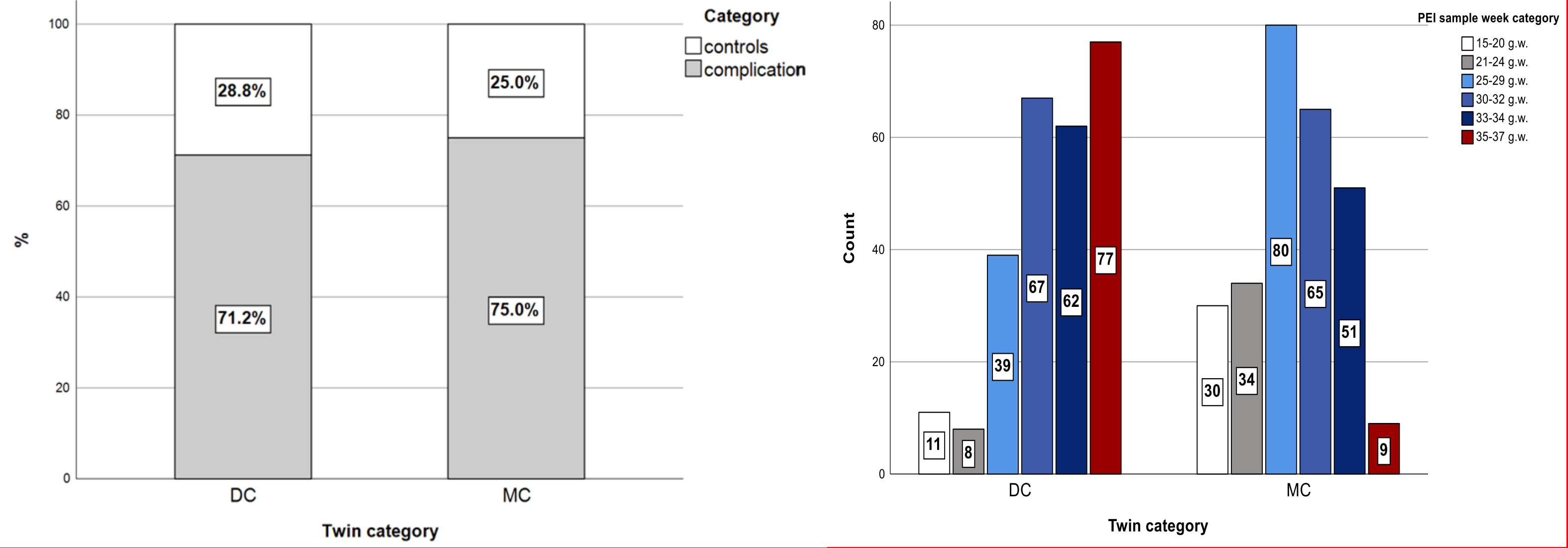


Figure 1. Amount of patients from all categories and sample weeks for mono- and dichorionic pregnancies

Characteristics		DC Control		DC Complication		MC Control		MC Complication		P
Gestational age ≤ 33 weeks										
	Abs. value	MoM	Abs. value	MoM	Abs. value	MoM	Abs. value	MoM		
sFlt-1 (ng/L)	3488 (2309 – 4963)	1 (0,7 – 1,4)	8326 (3356 – 15265)	2,4 (1 – 4,4)	3183 (2048 – 4723)	0,9 (0,6 – 1,4)	4155 (2513 – 7914)	1,2 (0,7 – 2,3)		<.001
PlGF (ng/L)	412 (266 – 770)	1 (0,6 – 1,9)	138 (92 – 290)	0,3 (0,2 – 0,7)	375 (213 – 640)	0,9 (0,5 – 1,6)	232 (127 – 396)	0,6 (0,3 – 1)		<.001
sFlt-1/PlGF ratio	6,7 (3,3 – 17,6)	1 (0,5 – 2,6)	65,7 (12,8 – 150,3)	9,8 (1,9 – 22,4)	6,6 (3,6 – 19,2)	1 (0,5 – 2,9)	21,3 (6,4 – 51,3)	3,2 (0,9 – 7,6)		<.001
Gestational age > 33 weeks										
	Abs. value	MoM	Abs. value	MoM	Abs. value	MoM	Abs. value	MoM		
sFlt-1 (ng/L)	6812 (4784 – 9941)	1 (0,7 – 1,5)	8897 (7020 – 12990)	1,3 (1 – 1,9)	7895 (3378 – 13657)	1,2 (0,5 – 2)	8874 (6469 – 14205)	1,3 (0,9 – 2,1)		0.025
PlGF (ng/L)	204 (138 – 268)	1 (0,7 – 1,3)	132 (94 – 182)	0,6 (0,5 – 0,9)	117 (68 – 654)	0,6 (0,3 – 3,2)	107 (69 – 149)	0,5 (0,3 – 0,7)		.002
sFlt-1/PlGF ratio	37 (19,9 – 56,6)	1 (0,5 – 1,5)	76,9 (44,1 – 114,7)	2,1 (1,2 – 3,1)	68,4 (5,2 – 122)	1,8 (0,1 – 3,3)	97,8 (61,7 – 146,6)	2,6 (1,7 – 4)		<.001

Figure 2. Comparison of MoM values between MC and DC twin pregnancies with and without complications

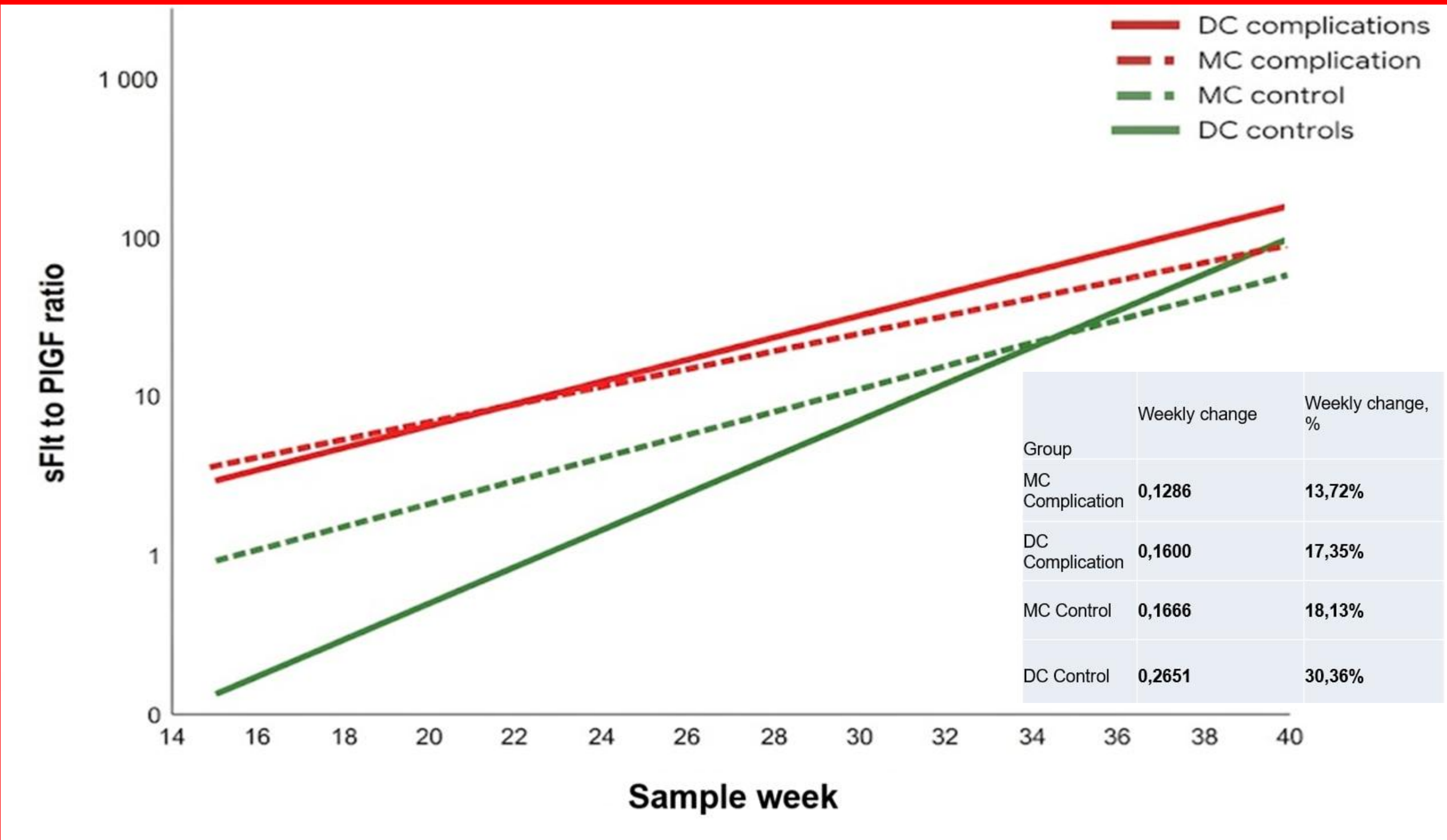


Figure 3. Increase in the sFlt-1/PlGF ratio with advancing gestational age and its weekly change