

Gestation-dependant increase of Renal Interlobar Vein Impedance Index in Preeclampsia.

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Background:

Venous Impedance Index (VI) is considered the Dopplerequivalent of arterial Resistance Index, and is defined as [Maximum velocity (MxV) –Minimun velocity (MnV)]/MxV. In a former study, we established a normal reference range for MxV, MnV and VI of Renal Interlobar Veins (RIV) during uncomplicated pregnancy, using a standard protocol with known intra-observer correlation coefficient 0,88. We found that gestational evolutions of MxV and MnV were very similar to those of respectively cardiac stroke volume and renal plasma flow.

Aim:

To evaluate RIV MxV, MnV and VI in preeclampsia (PE), relative to the normal reference values.

Methods:

PE was defined according to the criteria of the International Society for the Study of Hypertension in Pregnancy. RIV MxV and MnV were measured in 40 women with PE [23 mild (o) + 17 severe(■)], and VI was calculated. Mean values of 3 consecutive measurements per kidney were registered. Results were compared with 32w normal values using t-test. Individual measurements were plotted against the normal reference range.

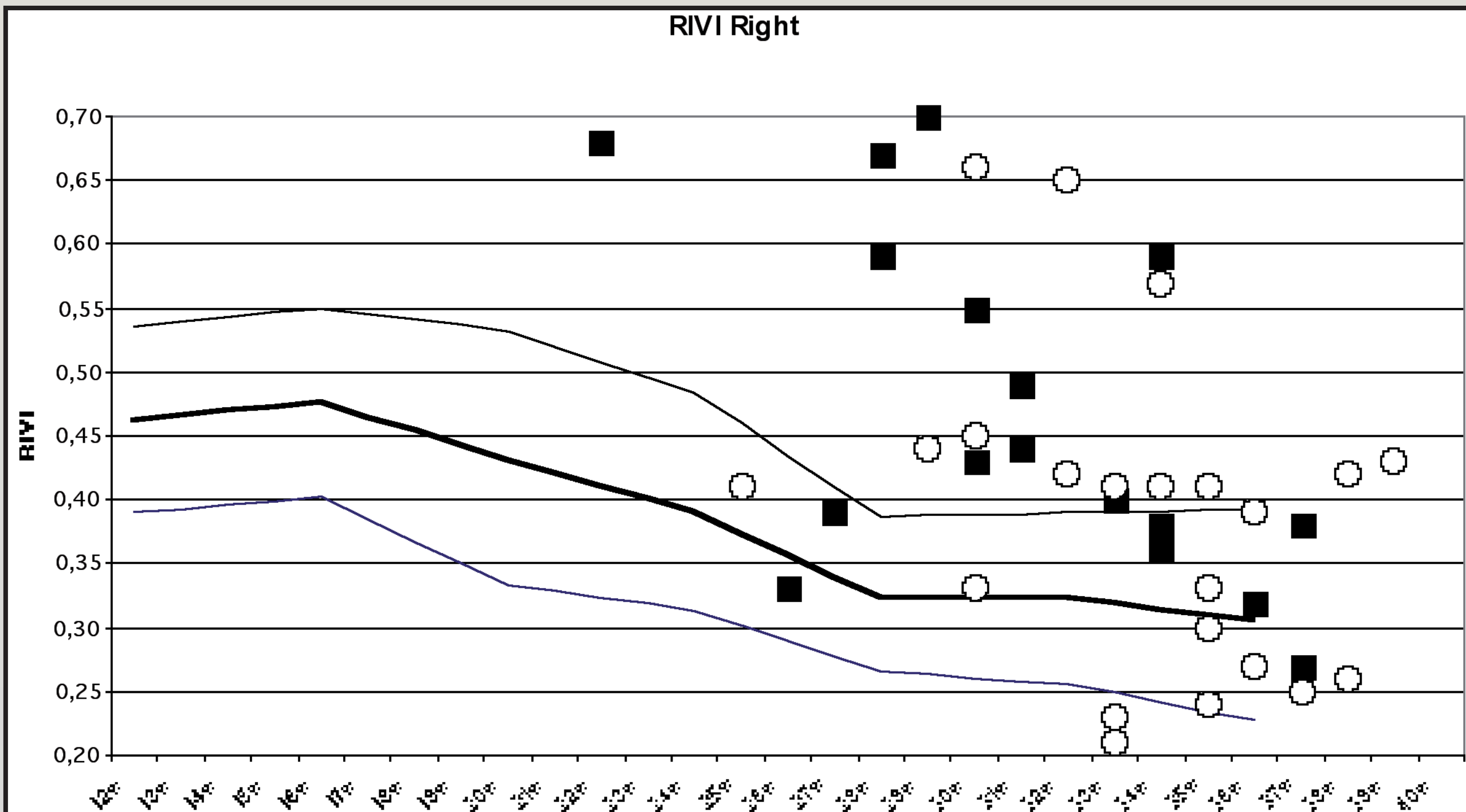
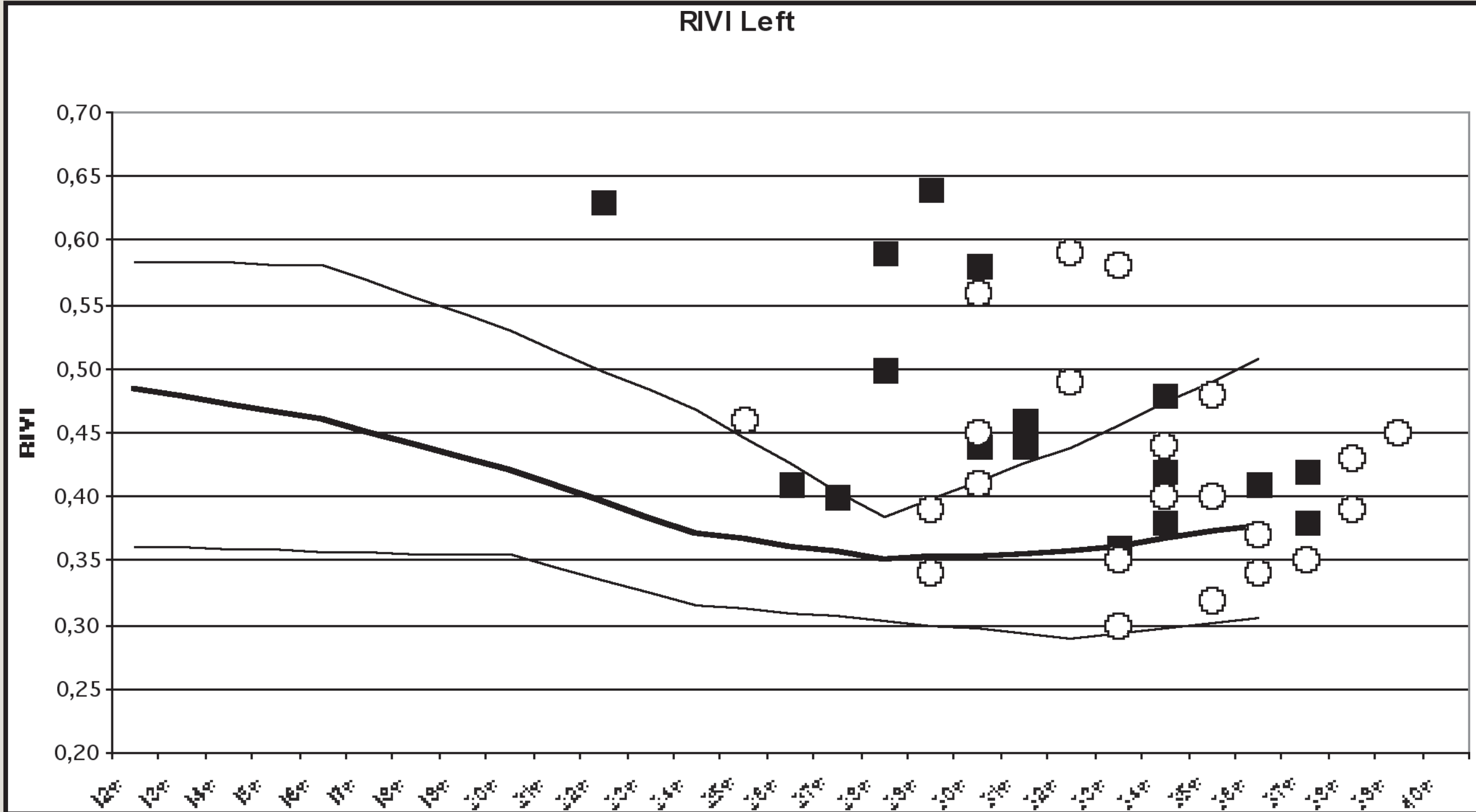
Results:

Mean gestation of PE pregnancies was 32.85±3.85 w. Compared with normal values, PE VI was significantly higher, both in left and in right kidney (Table 1). This was the result of 7-14% reduced MxV- and 20-25% reduced MnV-values. In both mild and severe PE, VI was mainly above the normal 95th percentile at gestation < 34 w, and within the normal reference range at ≥ 34w (Fig.1+2).

Discussion:

RIV VI is significantly higher in PE than in normal pregnancy. This results from lower values of MxV but even more MnV, and may relate to known PE-related reduction of respectively cardiac stroke volume and renal plasma flow. We observed this difference mostly at gestations < 34 w and not in PE near term.

		Normal pregnancy (n = 20)		Preeclampsia (n = 40)	P
	Gestation	32.07 ±0.62		32.85 ± 3.85	0.37
Left kidney	MxV(cm/s)	8.79 ± 1.41		7.60 ± 1.71	0.009
	MnV (cm/s)	6.65 ± 1.08		4.22 ± 1.08	<0.0001
	VI	0.36 ± 0.05		0.44 ± 0.09	0.0005
Right kidney	MxV(cm/s)	9.84 ± 1.84		9.18 ± 2.25	0.26
	MnV(cm/s)	6.68 ± 1.37		5.27 ± 1.63	0.0015
	VI	0.32 ± 0.07		0.42 ± 0.13	0.0022



Our data illustrate that Renal Interlobar Vein Impedance Index has the potential to become a new parameter to study maternal venous hemodynamics by Duplex ultrasound scan during normal and pathologic pregnancy.