



PRE-ECLAMPSIA SCREENING, REVIVAL OF ASPIRIN?

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Hypertension

Systolic BP ≥ 140 mmHg and/or
Diastolic BP ≥ 90 mmHg

- In a pregnant with N BP before
- > 20 w
- 2 measurements with 4h interval



Proteinuria

≥ 300 mg protein / 24 h

Urine protein/creatinine ≥ 0.3 mg/dl

1+ proteinuria

1+ = 0.3 g/l

2+ = 1 g/l

3+ = 3 g/l

Preeclampsia

HT + proteinuria

HT + TSP (<100 bin / μ L)

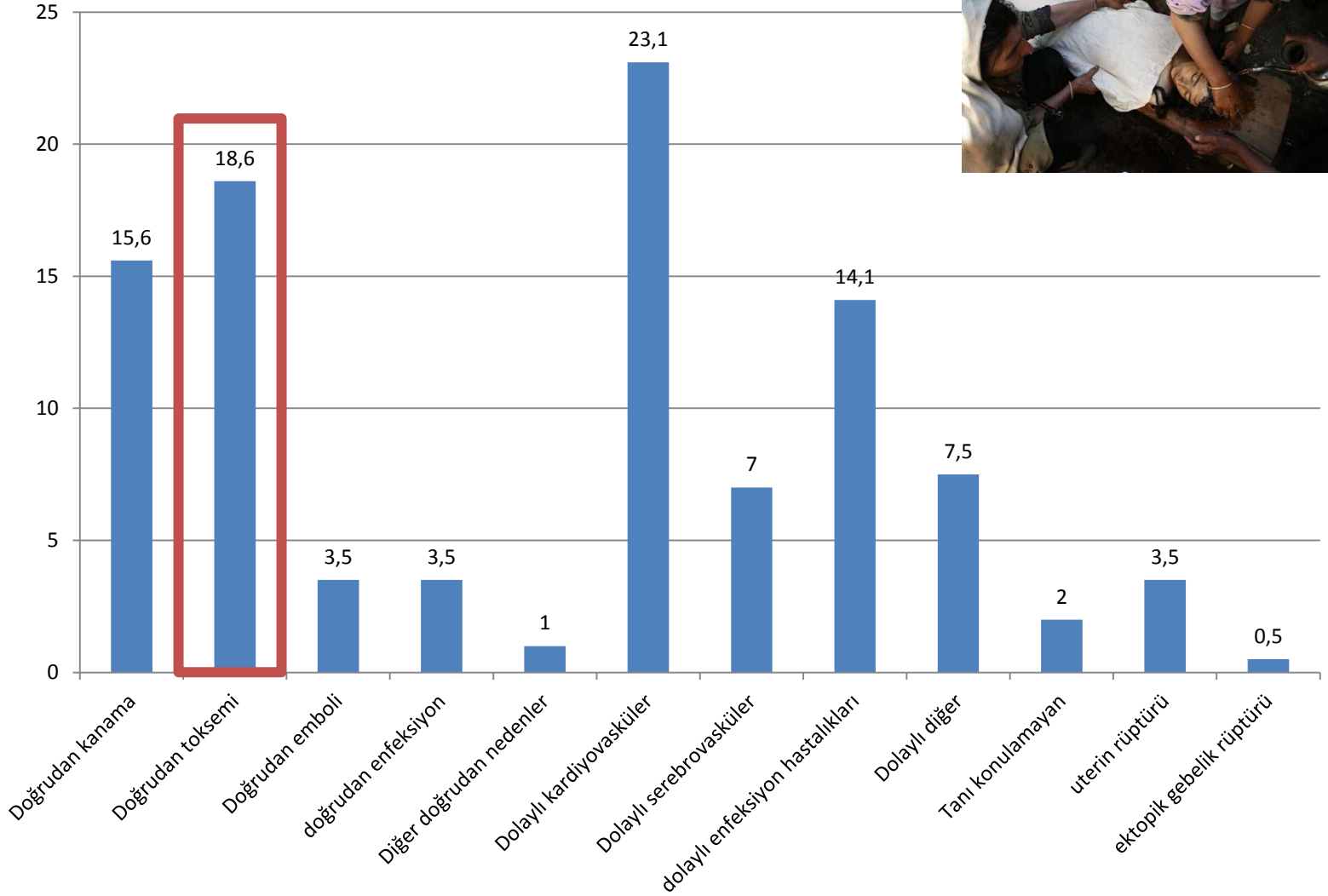
HT + abnormal KCFT (X2)

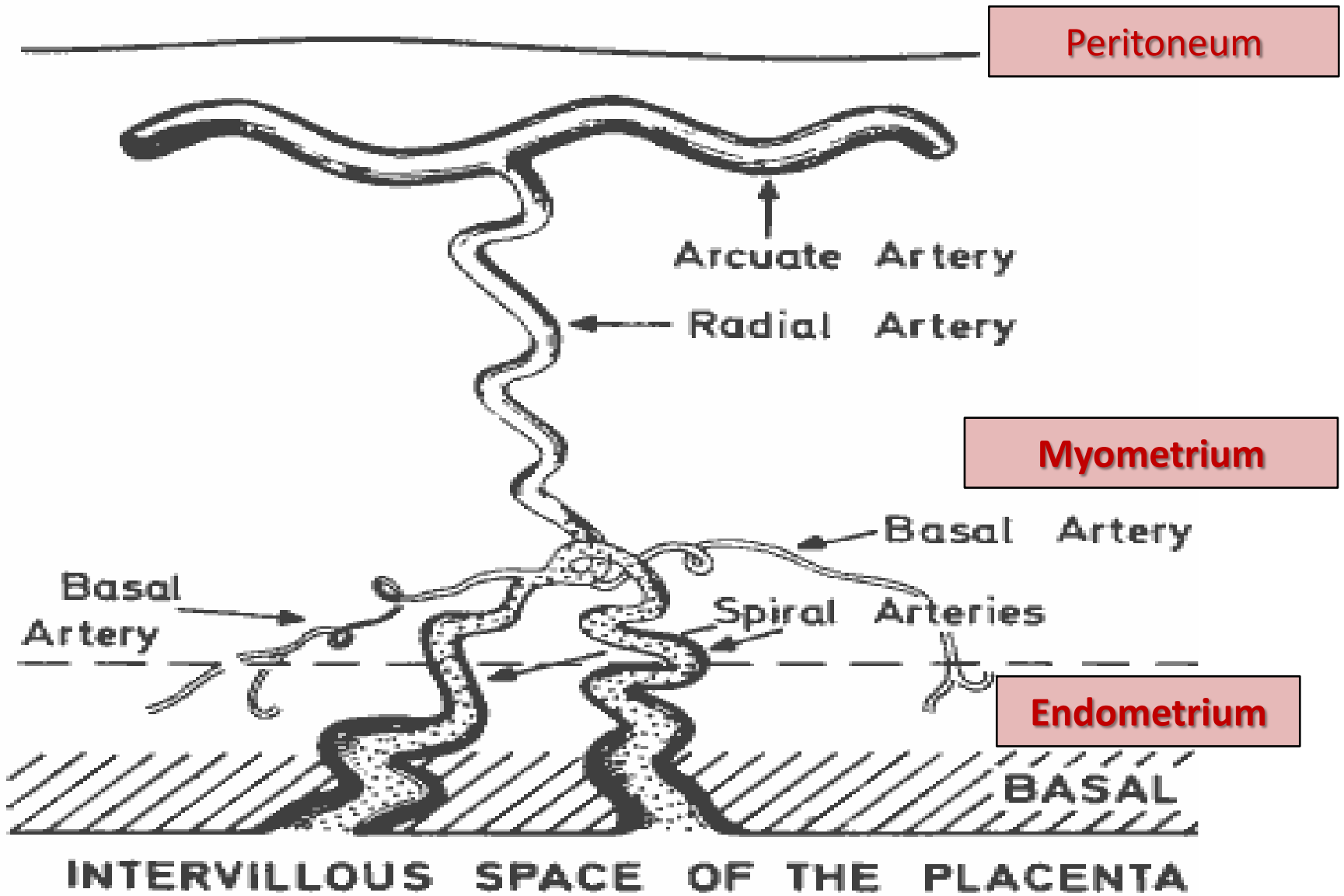
HT + new onset abnormal BFT (creatinine >1.1 mg/dL or X2)

HT + pulmonary edema

HT + new onset cerebral/visual dysfunction

2013 Yılı AÖ Ölüm Nedenleri (%)



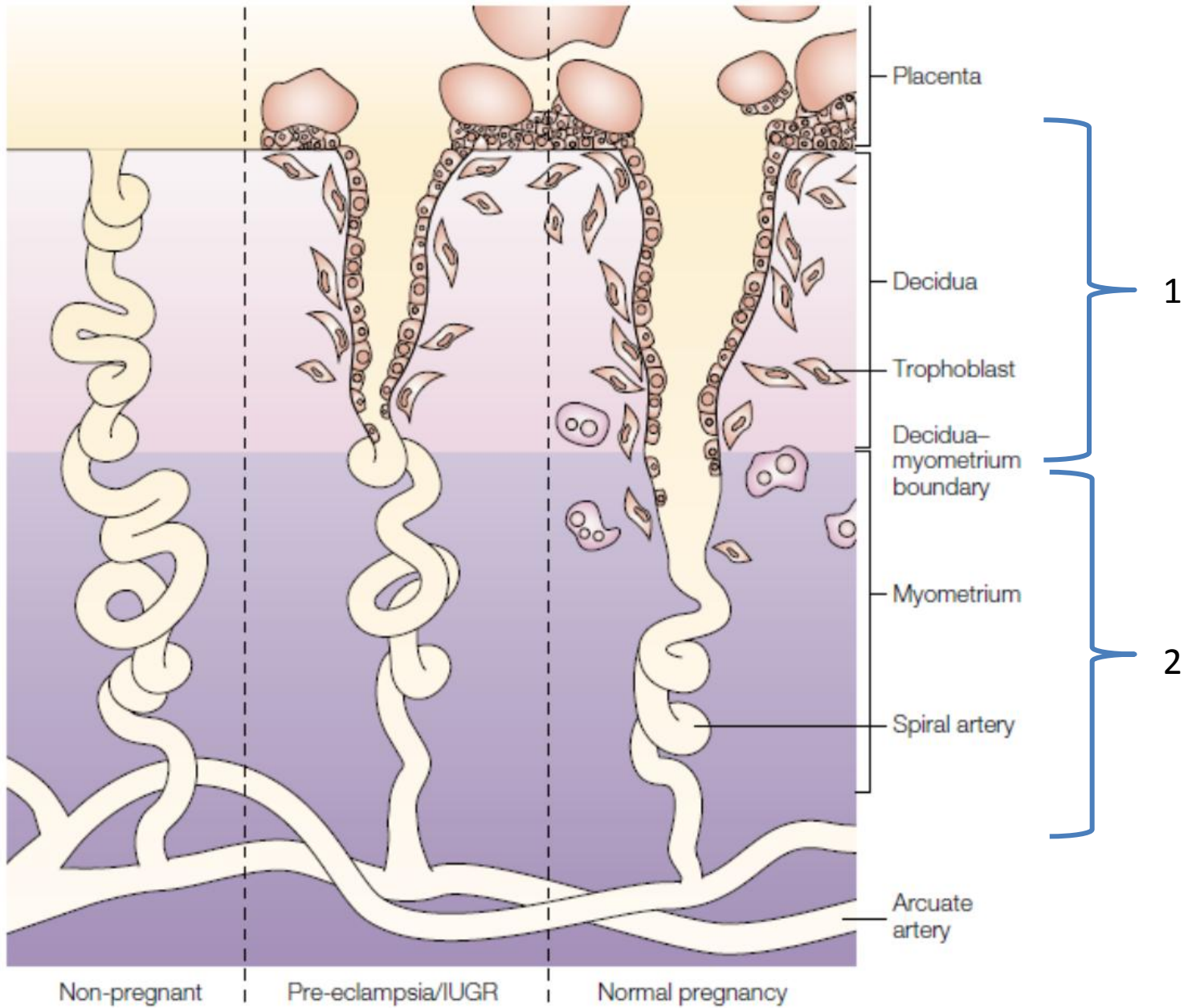


Peritoneum

Myometrium

Endometrium

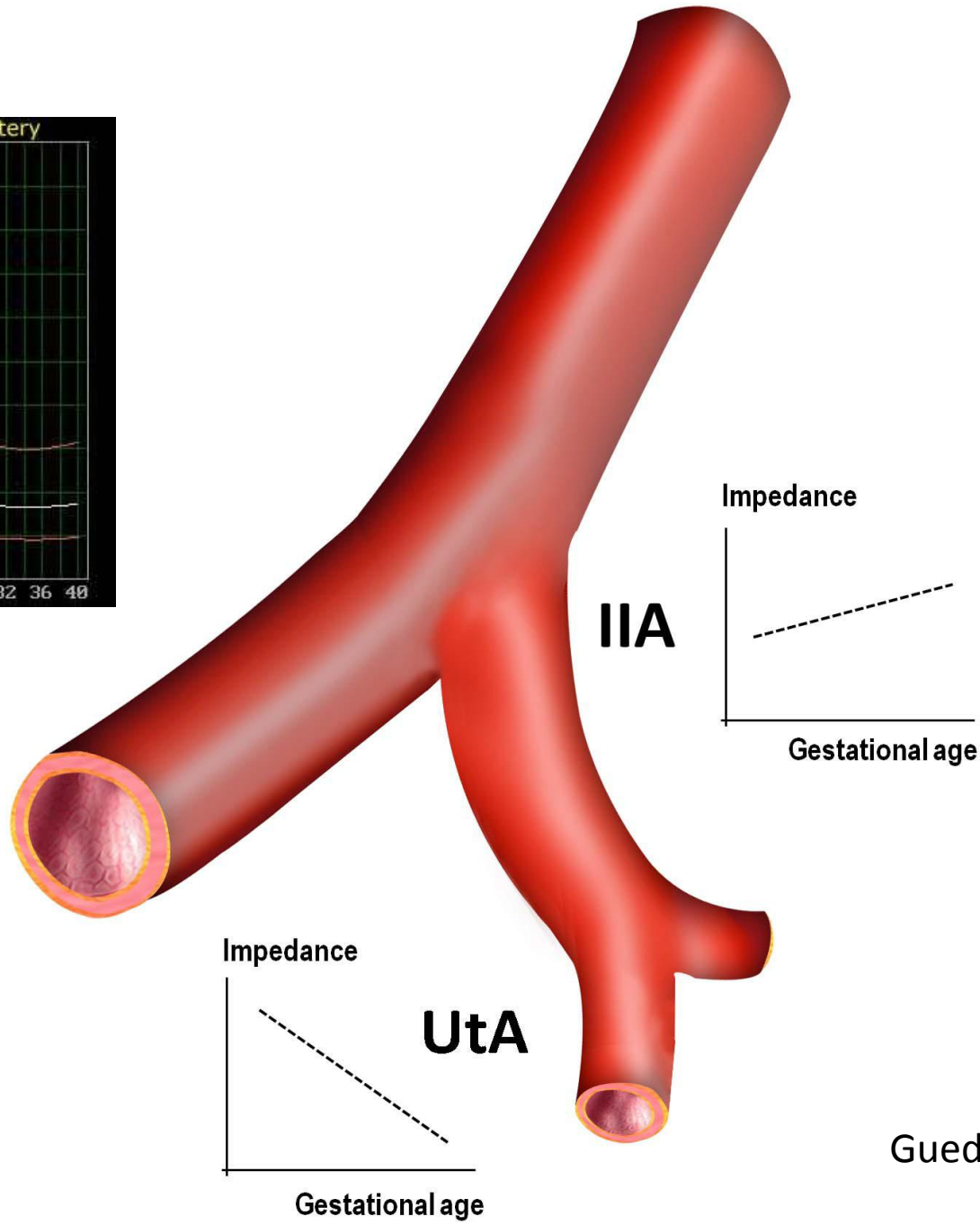
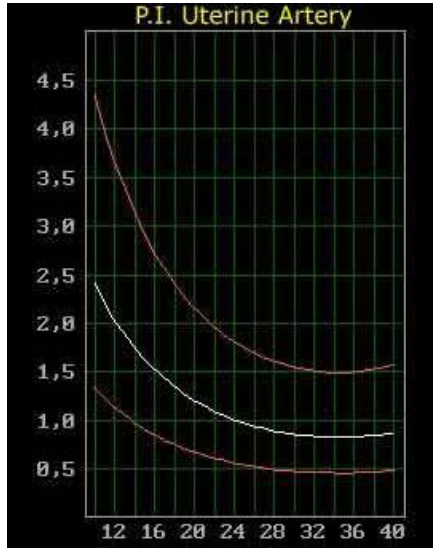
BASAL INTERVILLIOUS SPACE OF THE PLACENTA



Insufficient invasion of spiral arteries by trophoblasts



Transformation to $\downarrow R, \uparrow V$ vessels does not occur



PREECLAMPSIA

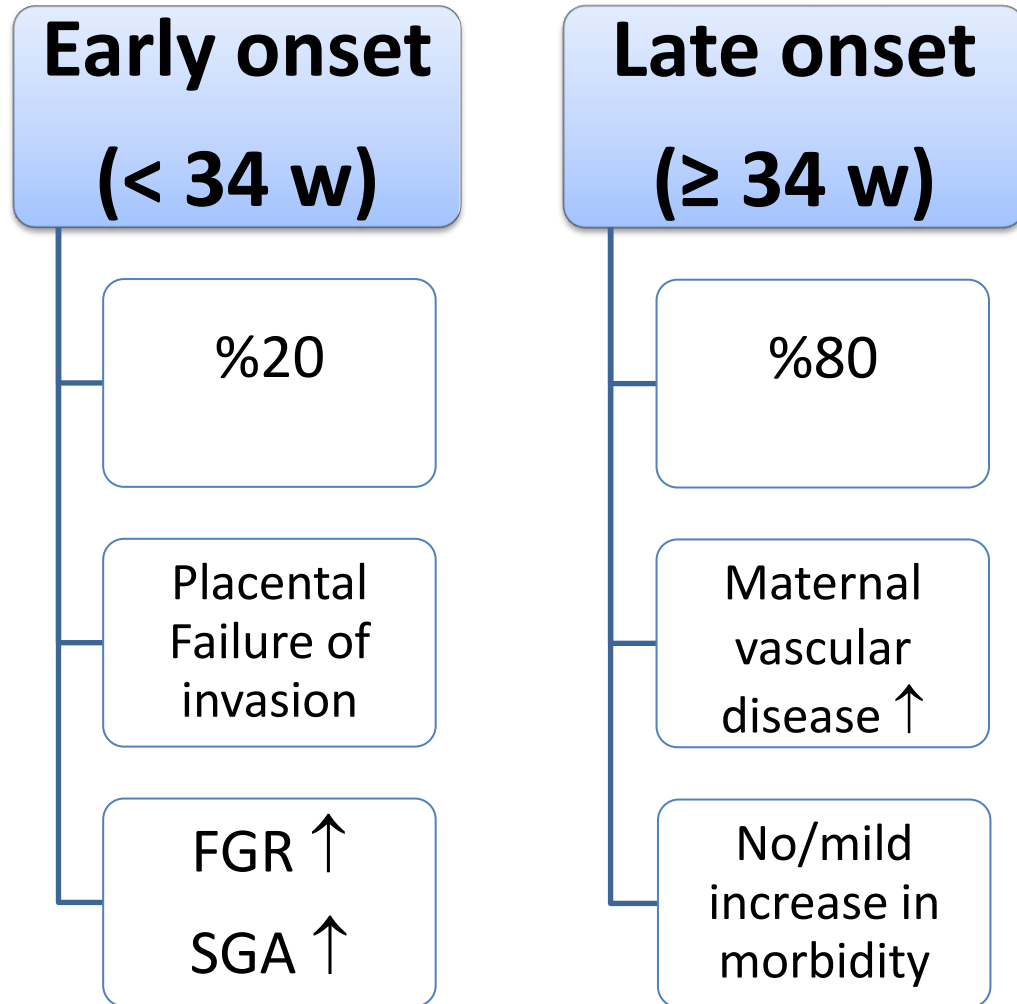
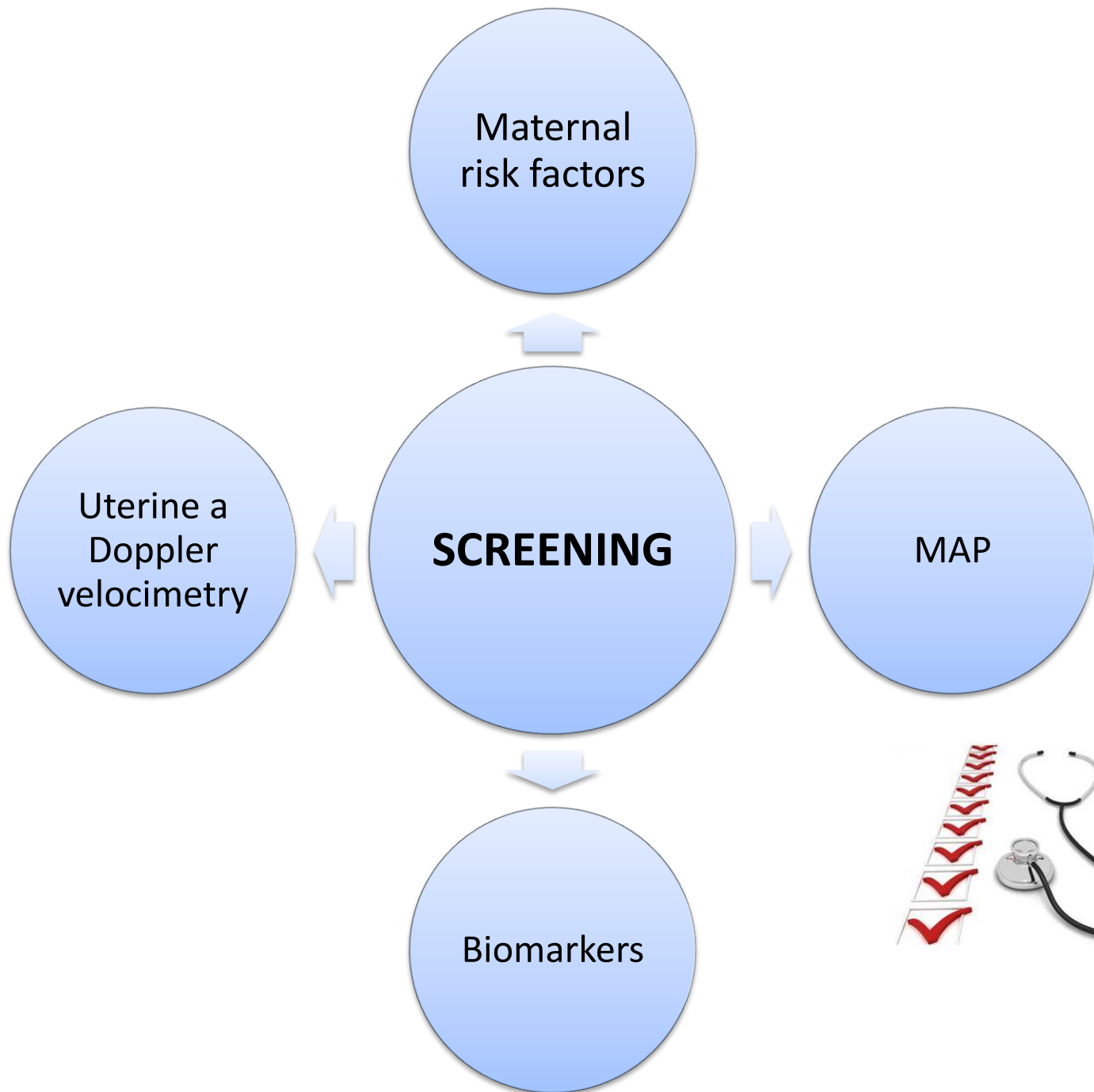


Table 1 WHO principles of screening

Condition	<p>The condition sought should be an important health problem</p> <p>There should be a recognisable latent or early symptomatic stage</p> <p>The natural history of the condition, including development from latent to declared disease, should be adequately understood</p>
Test	<p>There should be a suitable test or examination</p> <p>The test should be acceptable to the population</p>
Treatment	<p>There should be an accepted treatment for patients with recognised disease</p>
Screening program	<p>Facilities for diagnosis and treatment should be available</p> <p>There should be an agreed policy on whom to treat as patients</p> <p>The cost of case finding (including diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole</p> <p>Case finding should be a continuing process and not a 'once and for all' project</p>



NICE, 2010

1 high risk

- HT in previous preg
- Chronic kidney disease
- Autoimmune disease
- Type 1,2 DM
- Chronic HT

>1 moderate risk

- First pregnancy
- ≥ 40 y
- Preg interval >10 y
- BMI ≥ 35
- Family history of PE
- Multiple pregnancy

ACOG, 2013

1 risk

- Medical history of early onset PE
- PE in >1 prior pregnancy

Mean Arterial Pressure



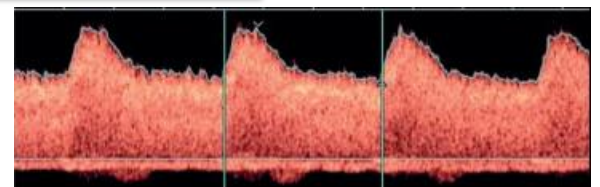
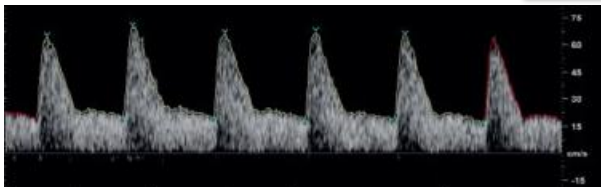
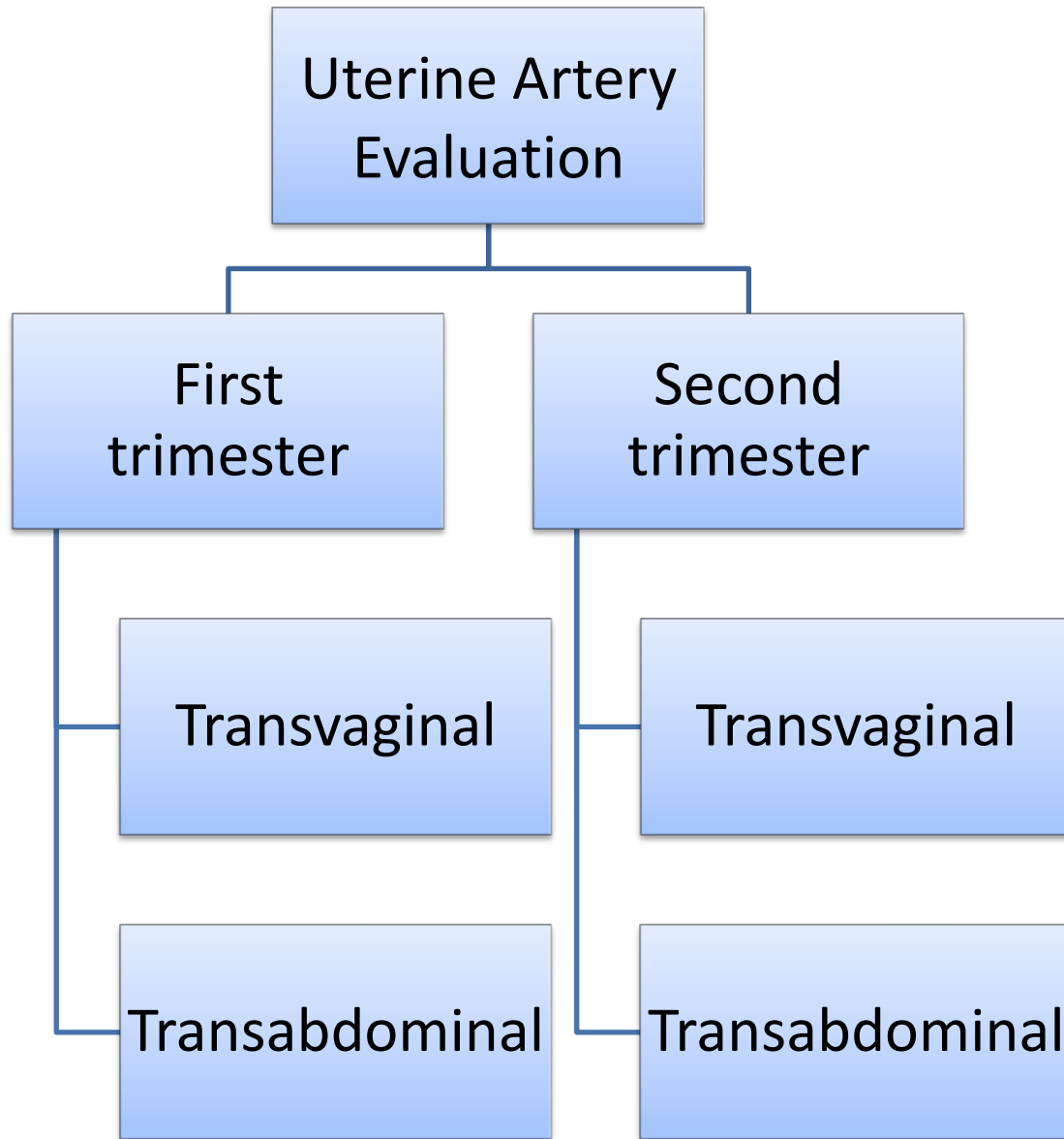
$[(2 \times \text{diastolic}) + \text{systolic}]$

3

Rested - seated, 45° angle with
arm, at heart level

An appropriately sized cuff

Study	Parameters	DR %5 FPR	DR %10 FPR
Poon, 2010	Maternal factors	37 (early) 28.9 (late)	
Audibert, 2010	Maternal factors	30	
Akolekar, 2011	Maternal factors	33 (early) 24.5 (late)	
Poon, 2008	Maternal factors, MAP		62.5



Protocol for 1st trimester assessment of UA Doppler

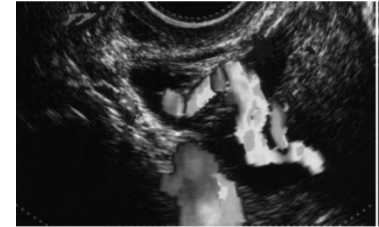
Ultrasound Obstet Gynecol 2013; 41: 233-239
Published online in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/uoq.12371



GUIDELINES

ISUOG Practice Guidelines: use of Doppler ultrasonography in obstetrics

11 - 13⁶ w
Empty bladder



Transabdominal

Midsagittal section of the uterus
Identify cervical canal

Transvaginal

Place the probe in the anterior fornix

Move probe laterally till paracervical vascular plexus is seen.
Identify UA
Measure as it turns cranially

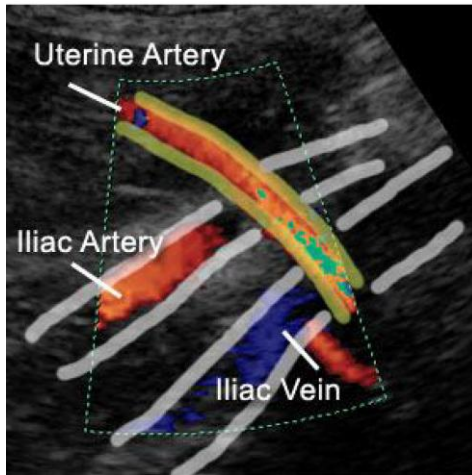
Protocol for 2nd trimester assessment of UA Doppler

Transabdominal

Place probe long/lower lat
Identify UA as crossing IIA
1 cm downstream

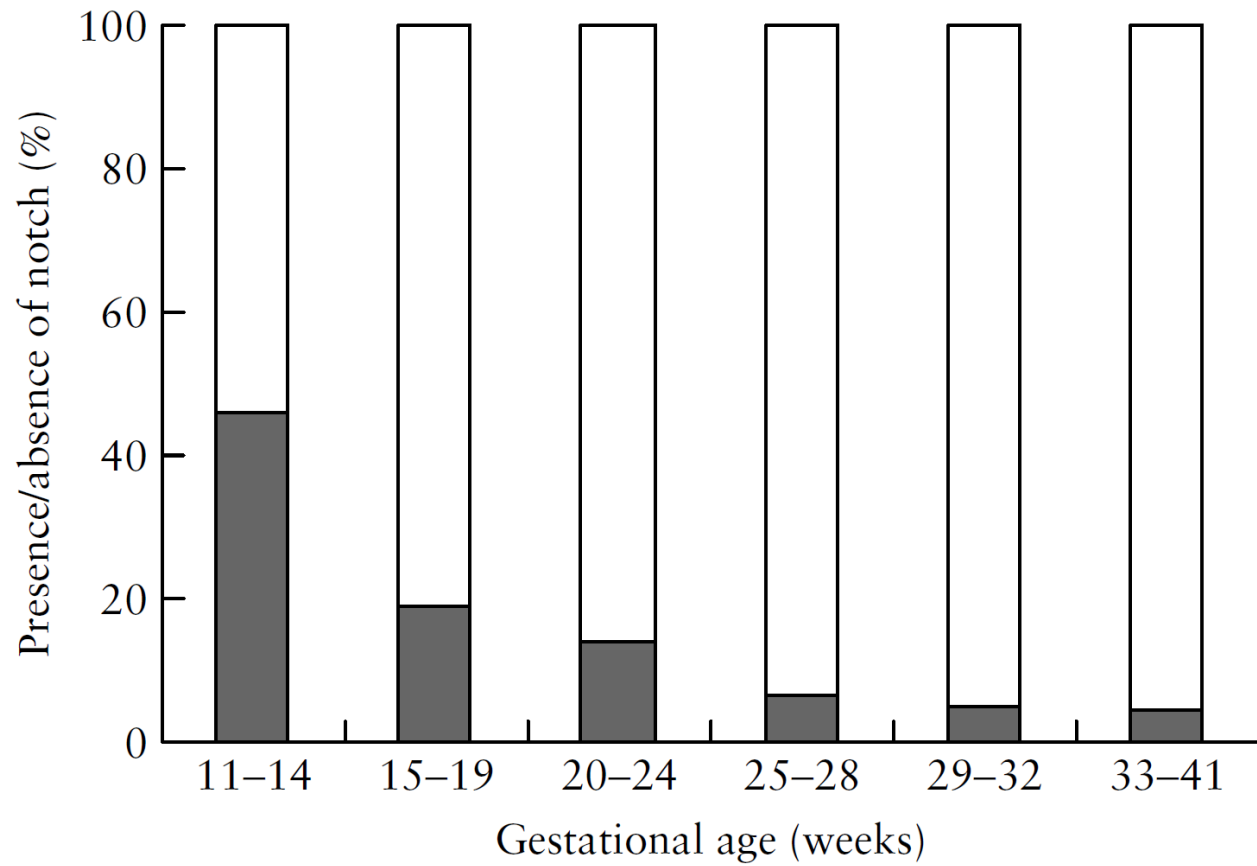
Transvaginal

Empty bladder
Place probe in lat fornix
Identify UA at the level of
int cervical os



Pulsed wave Doppler

- sampling gate: 2 mm
 - angle of insonation $<30^\circ$
- 3 similar consecutive waveforms
Calculate mean PI



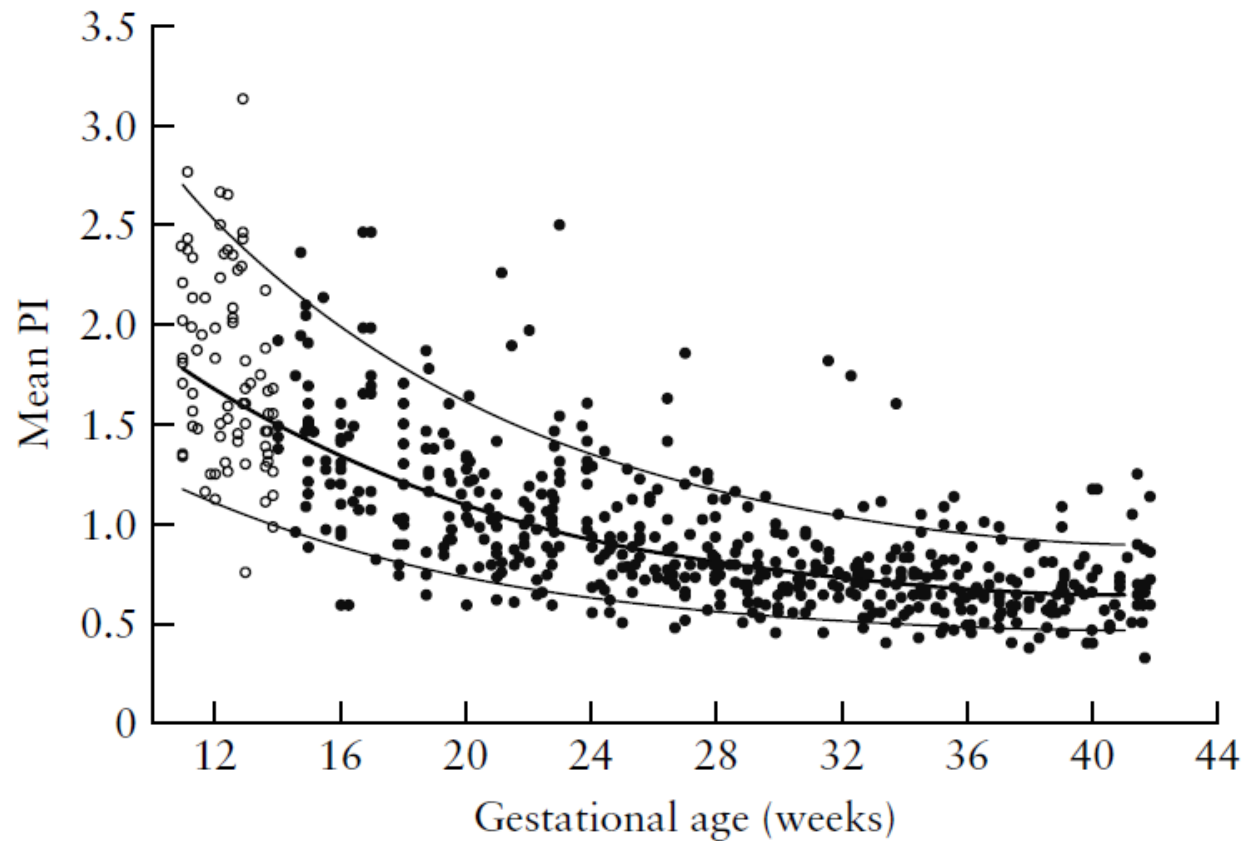
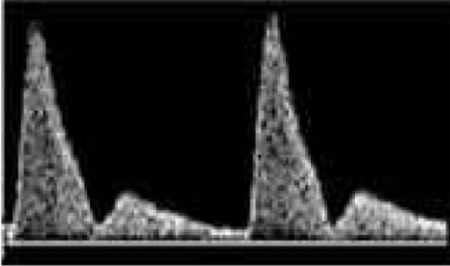
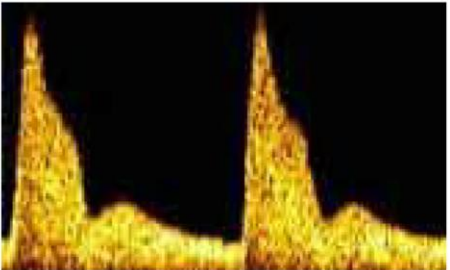


Figure 3 Scatterplot of the mean uterine artery pulsatility index (PI) measured by transvaginal (○) and transabdominal (●) ultrasound examination vs. gestational age in our population. Estimated 5th, 50th and 95th centiles are shown.

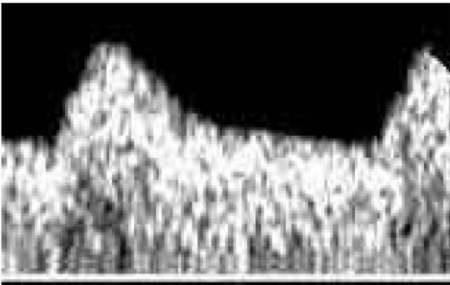
Normal uterine artery



Normal impedance to flow in the uterine arteries in 1^o trimester



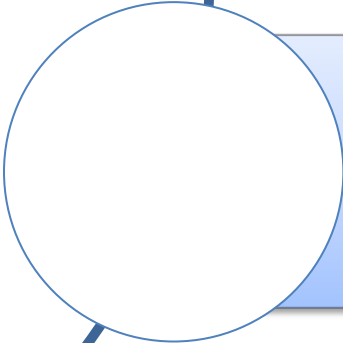

Normal impedance to flow in the uterine arteries in early 2^o trimester



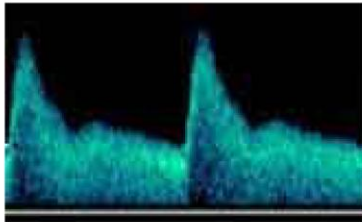
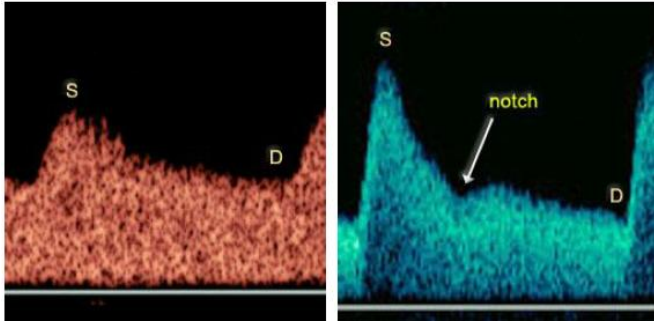
Normal impedance to flow in the uterine arteries in late 2^o and 3^o trimester



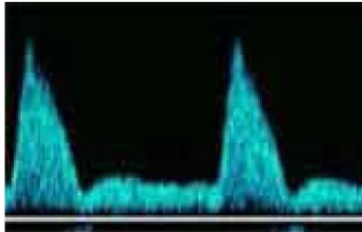
Velocities over 50 cm/s are typical of UA



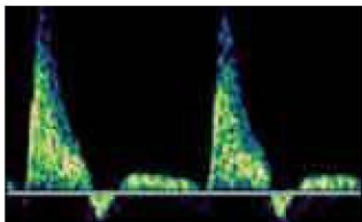
Reference ranges for UA Doppler indices depend on the technique so appropriate reference ranges should be used for TA and TV routes



Normal impedance to flow in the uterine arteries (with the characteristic waveform of early diastolic notching)

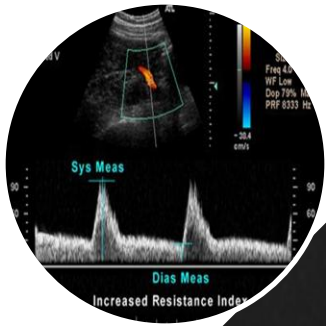


Increased impedance to flow in the uterine arteries (with the characteristic waveform of early diastolic notching)



Very high resistance to flow in the uterine arteries (with reverse diastolic flow)

INCREASED VASCULAR RESISTANCE



PI > %95

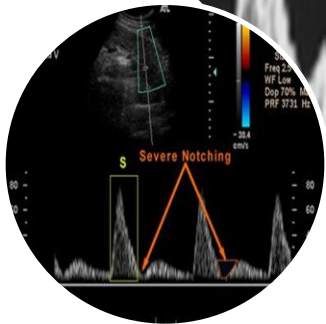
> 2.35

RI > 0.58

Notch

-Bilateral

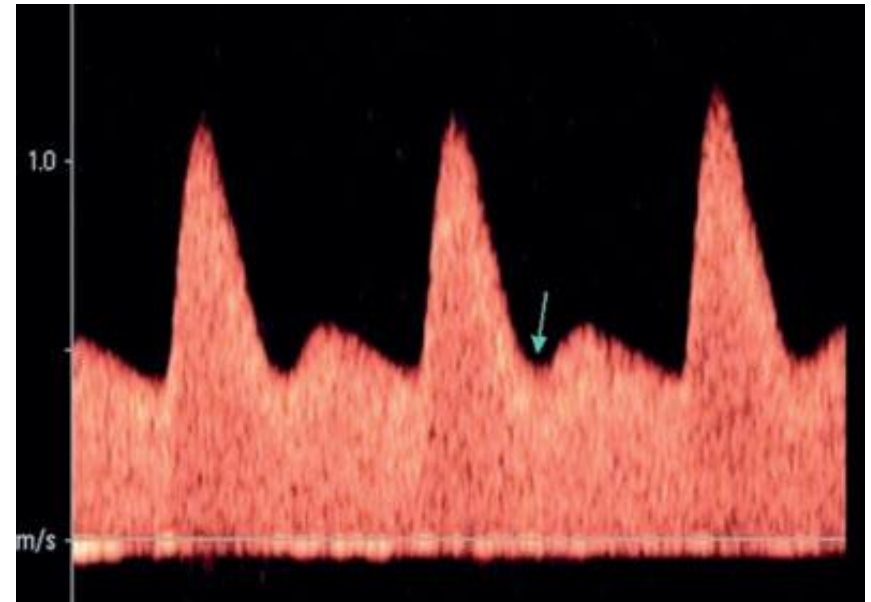
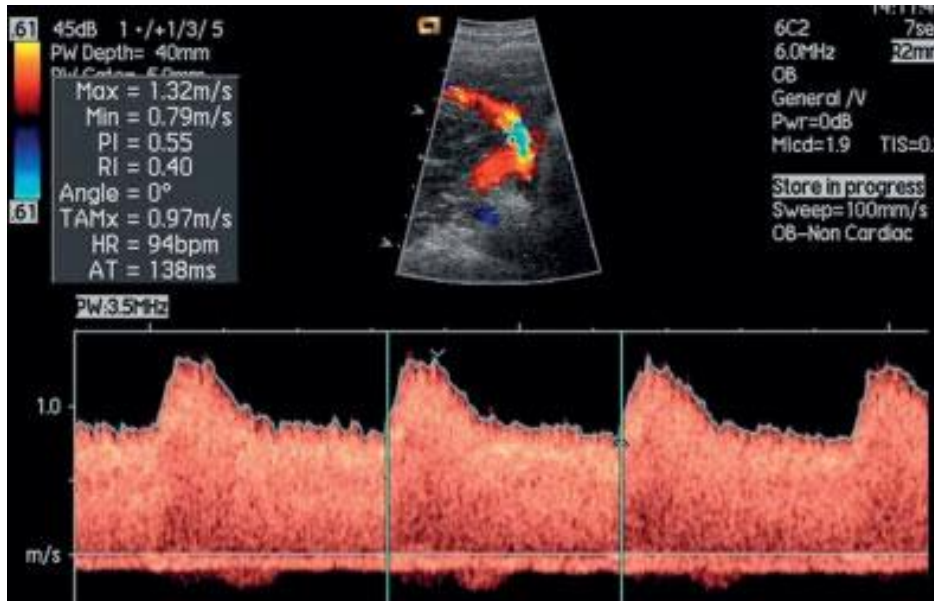
-Unilateral on
placental site



Study	First trimester Doppler parameters	DR Early onset	DR Late onset
Martin, 2001	Mean PI>%95 (2.35)	50	
Plasencia, 2008	Mean PI>%95	45.5	15
Akolekar, 2008	Mean PI>%95	69	
Melchiorre, 2008	RI>%95	48.5	21.1

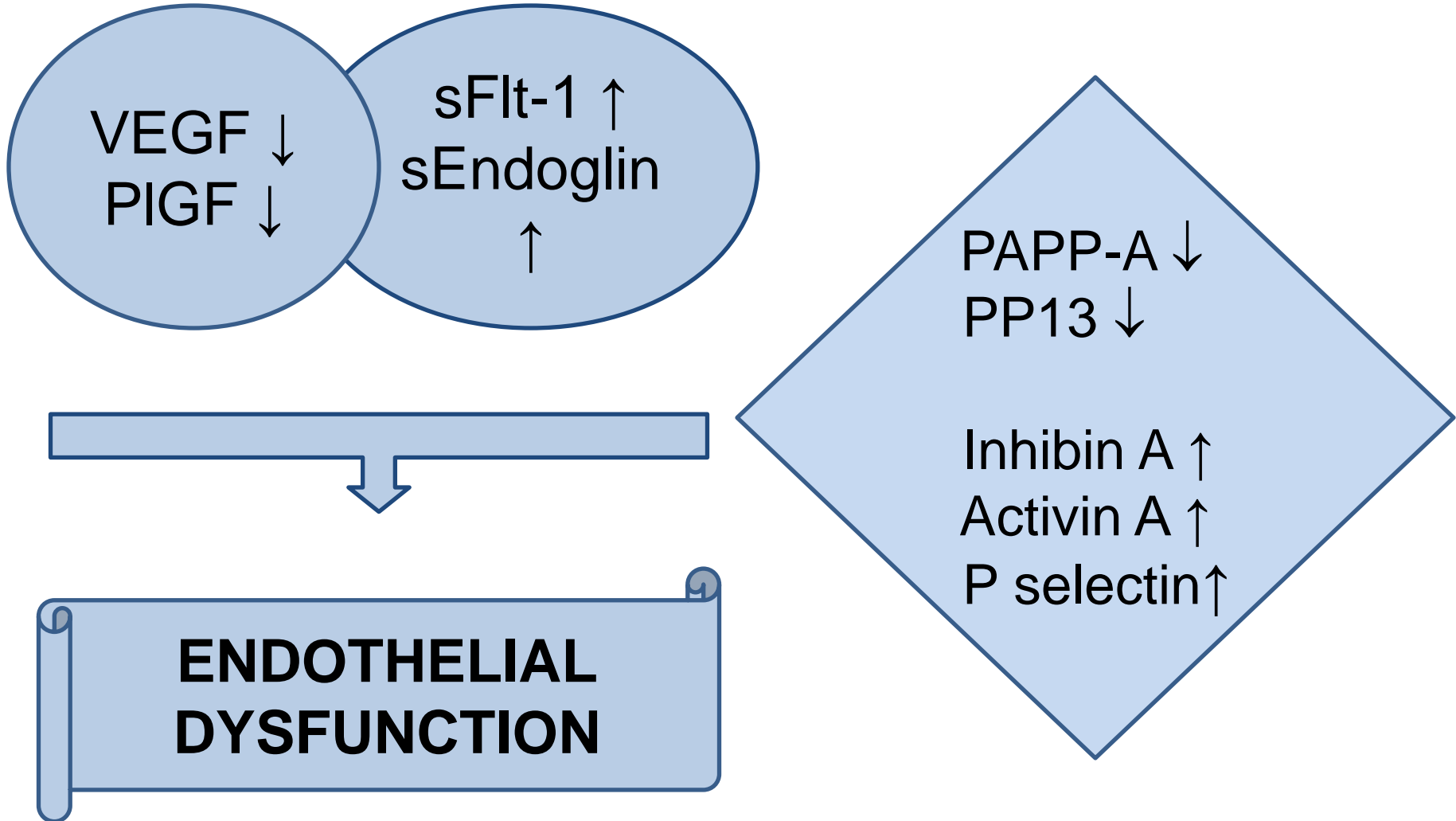
1st trimester Doppler has reduced diagnostic accuracy for late onset PE

ISUOG Practice Guidelines: use of Doppler ultrasonography in obstetrics



DR of 2nd trimester > DR of 1st trimester

BIOMARKERS



COMBINATION OF TESTS

Early onset PE

Study	Parameters	DR %5 FPR	DR %10 FPR
Poon 2009	MC, UA, MAP, PAPP-A, PIGF	93	
Poon 2010	MC, UA, MAP, PAPP-A	84	95
Akolekar 2011	MC, UA, MAP, PAPP-A, PIGF, PP13, sEng, inhibin A, PTX3	91	95

EARLY ONSET PE

Study	Parameters	DR %5 FPR	DR %10 FPR
Park 2013	MC, UA, MAP, PAPP-A	41.7	91.7
Scazzocchio 2013	MC, UA, MAP, PAPP-A	69	81
Akolekar 2013	MC, UA, MAP, PAPP-A, PIGF	93	96

Shallow invasion of trophoblast

↓ placental perfusion

Ischemia

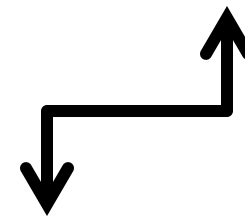
Activation of platelets

Thromboxane ↑

Prostacyclin
Nitric oksit



LOW DOSE ASPIRIN



ASPIRIN TRIALS

Study	Trials	Women	RR	Reduction
Duley, 2007 Cochrane	46	32891	0.83	%17
Askie, 2007 PARIS	>50	32217	0.9	%10 benefit
Bujold, 2010	27	11348	≤ 16 w - 0.47 > 16 w - 0.81	%50 at all No benefit
Roberge, 2013	42	27222	≤ 16 w - 0.47 > 16 w - 0.78	
Villa, 2013 PREDO	1	152	< 16 w - 0.6	

ASP may be more beneficial if given before 16w

NIH recommends high risk women to take 75 mg/d ASP (from 12w until birth)

ACOG -For women with a history of early onset PE and PD or PE >1 pregnancy 60-80 mg/d ASP in late first trimester



Calcium supplementation during pregnancy for preventing hypertensive disorders and related problems (Review)

Hofmeyr GJ, Lawrie TA, Atallah ÁN, Duley L

Ca-RR=0.45

Vit E or C not effective

Bed rest, salt restriction not effective

LMWH, Folate, vit D, statins are investigated

Early PE screening not recommended-UK

Screening beyond obtaining a medical history for risk factors is not recommended-ACOG

No recommendation for routine screening of all pregnant with Doppler

Women at high risk for development of PE could benefit from 1st trimester Doppler evaluation

Software

Patient Data | Ultrasound | Biochemistry | Uterine Doppler (PET) | Risks / Counselling | Comments | Karyotype

Fetus 1

Previous chromosomally abnormal child or fetus: trisomy 21 trisomy 18 trisomy 13

Patient counselled and consent given

Calculate

Maternal age		Trisomy 21	Trisomy 18	Trisomy 13
Background risk	1 :	320	725	2289
Adjusted risk	1 :	760	6562	4313

Risks of hypertensive disorders: ⓘ

Risk for early preeclampsia	1 : 259
Risk for preeclampsia at any gestation	1 : 108
Risk for all hypertensive disorders	2 %

The background risk is based on maternal age. The adjusted risk is the risk at the time of screening, calculated on the basis of the background risk, ultrasound factors (fetal nuchal translucency thickness, tricuspid Doppler) and maternal serum biochemistry (free beta-hCG and PAPP-A). The biochemical medians are adjusted for maternal weight, smoking and IVF pregnancy.

Risks for hypertensive disorders are based on maternal history, uterine Doppler, mean arterial pressure (MAP) and PAPP-A.

THANK YOU



PMC

*Dergimiz JTGGA
artık Pubmed Central'de...*