

Introduction

- Maternal obesity is associated with metabolic, inflammatory and oxidative stress pathways that may adversely affect placental development and function.
- VEGF is a key regulator of placental angiogenesis and vascular remodeling.

Table 1. Pregnancy	Maternal age [mean ± SD]	Gestation age [mean ± SD]
Normal BMI (N=30)	26.6 ± 4	40.5 ± 0.84
BMI > 30 kg/m ² (N=12)	29.5 ± 2.4 ^{ns}	39.5 ± 2.1 ^{ns}

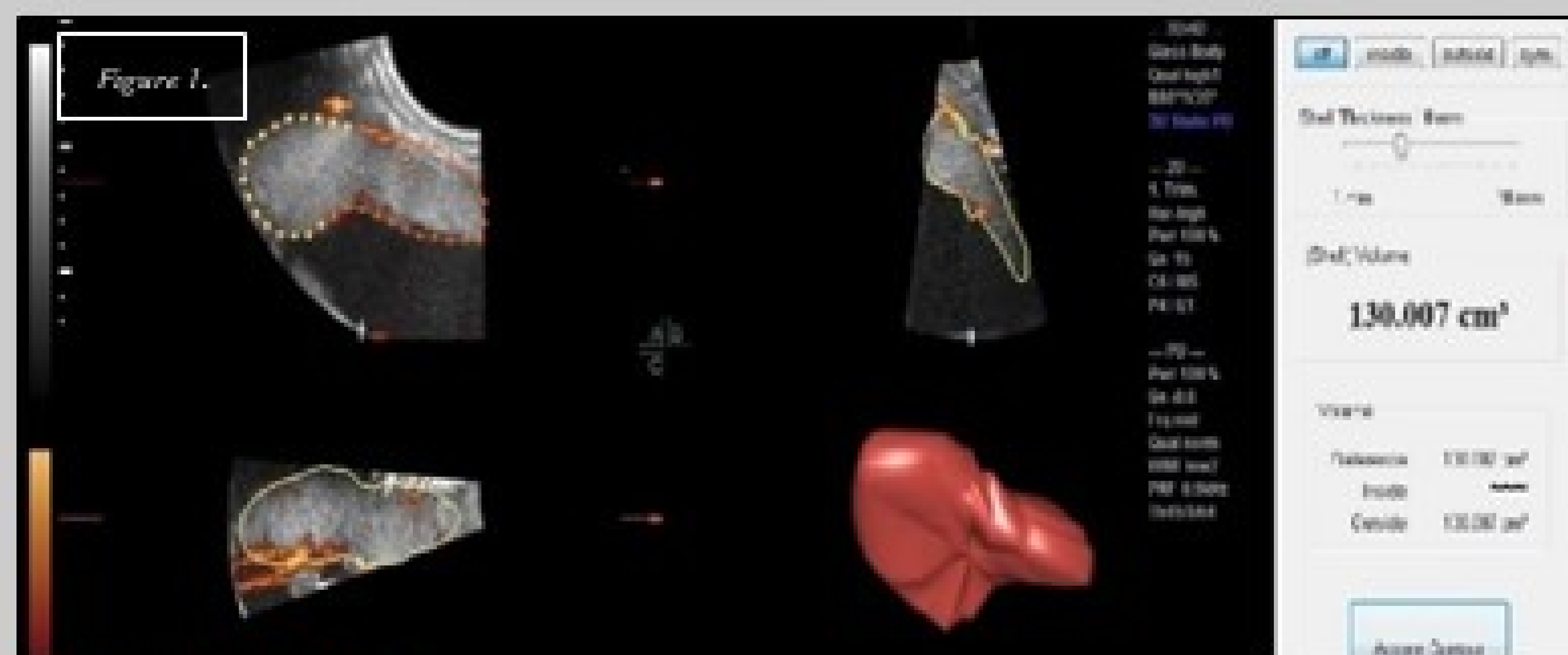
Results

We found that VEGF expression in the placenta was reduced in obese mothers (Fig. 2), with a good correlation with vascularization. In contrast, placental volume and vascularity were inversely proportional to that in controls (Table 2).

Table 2. Placental sonography	Normal BMI (N=30)	BMI > 30 kg/m ² (N=12)
Placental volume (ml ± SD)	527.3 ± 93.1	775.6 ± 143.2 *
VI (mean ± SD)	14.11 ± 5.1	8.71 ± 2.4 *
FI (mean ± SD)	44.97 ± 22.64	37.4 ± 10.9 *
VFI (mean ± SD)	8.21 ± 3.63	4.74 ± 1.34 *

Aim

To investigate placental volume, vascularity and VEGF expression in obese and normal-weight pregnant women



Figures 1: Placental volumetry by 3D

Material and methods:

Study population (Table 1.)

Normal BMI (n = 30)

BMI > 30 kg/m² (n = 12)

Measurements

3D placental volumetry (Fig 1)

Vascularity assessment

VEGF quantification

Statistics

ANOVA, p < 0.05

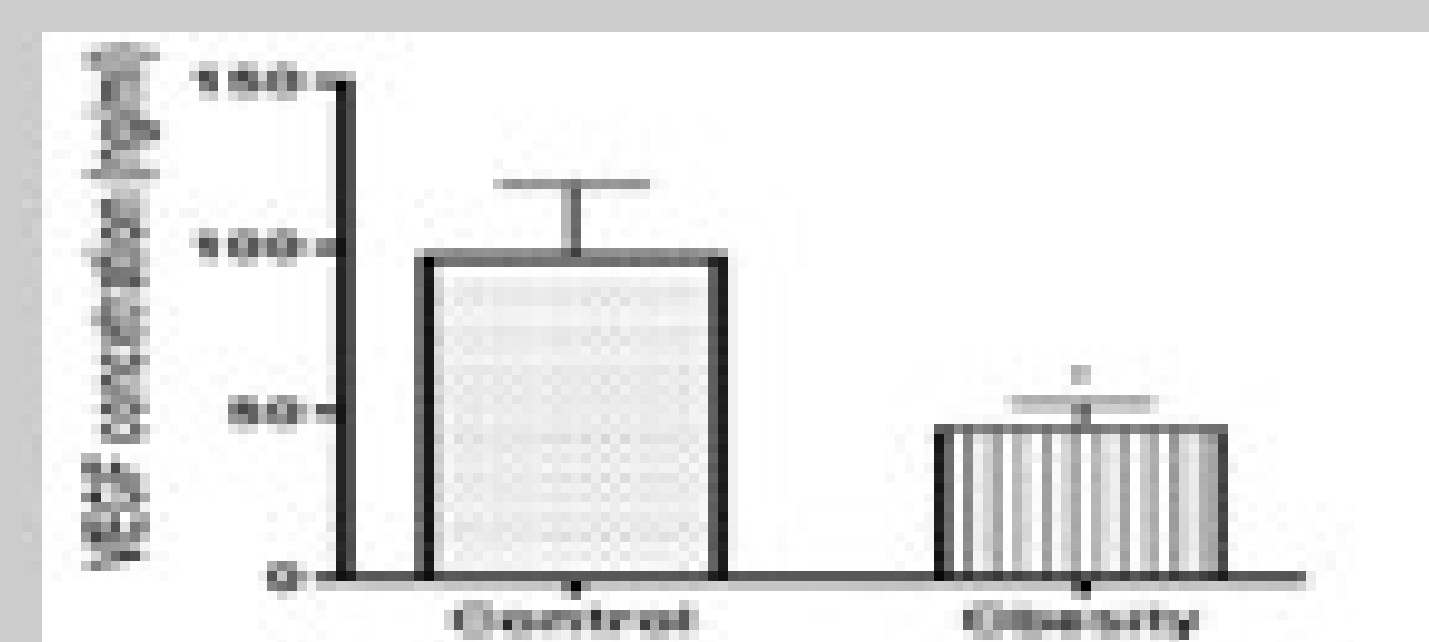


Figure 2: Changes in the VEGF concentration (ng/ml) in the placental tissues collected from obese and control women. *: p < 0.05 as compared to the control.

Key findings:

↑ 47%

Placental volume: 775.6 ml vs 527.3 ml

↓ 38%

Vascularity Index: Significantly reduced in obesity

↓ 41%

Lower VEGF concentration in obese placentas (p < 0.05)

Conclusion

Maternal obesity is associated with increased placental volume, reduced vascularity and decreased VEGF expression, suggesting impaired placental angiogenesis and perfusion.

Funding: Funding Supported by 'Géza Hetényi' Grant, Medical Faculty Research Fund, University of Szeged (No.: 58 724 /A202)