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Poster Title: ACTIVATION OF NF- κ B AND EXPRESSION OF COX-2 IS ASSOCIATED WITH NEUTROPHIL INFILTRATION IN SYSTEMIC VASCULAR TISSUE OF WOMEN WITH PREECLAMPSIA

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Background: Preeclampsia (PE) is a disorder of pregnancy characterized by maternal high blood pressure and proteinuria. Neutrophils infiltrate systemic vascular tissue in women with preeclampsia. Neutrophils produce reactive oxygen species and inflammatory cytokines that could cause vascular inflammation. NF- κ B is a transcription factor activated by inflammation. One of the proteins induced by NF- κ B is COX-2 which produces inflammatory products.

Objectives: We hypothesized that neutrophil infiltration into systemic vascular tissue of preeclamptic women would be associated with activation of NF- κ B and expression of COX-2.

Methods: Subcutaneous fat biopsies were obtained at abdominal surgery from 5 normal non-pregnant (NNP), 6 normal pregnant women (NP) and 7 preeclamptic women (PE). Patients were matched for BMI and not in labor. Serial sections of fat biopsies were immunohistochemically stained for CD66b, a neutrophil antigen, NF- κ B (p65) and COX-2. Data were evaluated for % vessels stained, intensity of staining by visual score (0-3), and density of staining using image analysis software. Results are for resistance-sized vessels (10-200 μ m).

Results: The % of vessels with staining was significantly greater for PE than for NP or NNP for all three antigens ($P < 0.01$): CD66b (72.5 ± 10.8 vs. 33.8 ± 10.3 vs. $17.1 \pm 8.8\%$, respectively, $P < 0.01$); NF- κ B (87.1 ± 4.9 vs. 39.2 ± 10.7 vs. $6.7 \pm 12.7\%$, respectively, $P < 0.01$); and COX-2 (92.9 ± 2.9 vs. 21.1 ± 8.2 vs. $11.2 \pm 9.1\%$, respectively, $P < 0.001$). Intensity of vessel staining assessed by visual score was also significantly greater for PE than for NP or NNP, $P < 0.01$. Density of staining for all three antigens was also significantly greater for PE than NP or NNP, $P < 0.05$. In PE, vessel staining for NF- κ B and COX-2 was present in both endothelium and vascular smooth muscle, and neutrophils were present on endothelium and in the intimal space. Neutrophils that were infiltrating vessels also stained for NF- κ B and COX-2.

Conclusions: Endothelium and vascular smooth muscle of maternal systemic vessels

showed activation of NF- κ B and expression of COX-2 in association with neutrophil infiltration in women with preeclampsia. Infiltrating neutrophils also showed activation of NF- κ B and expression of COX-2. These new data place preeclampsia in the category of an inflammatory disease associated with immune dysfunction. They suggest potential benefit of treatment with antioxidants and/or COX-2 inhibitors.