

# Biomarkers May Explain Disparity in Preterm Birth

*Serum CRP values were much higher for black than for white women, independent of maternal weight.*

BY BETSY BATES  
Los Angeles Bureau

RENO, NEV. — Significant racial differences in proinflammatory biomarkers during pregnancy may help to illuminate reasons for disparate rates of preterm birth between black and white women, according to speakers at the annual meeting of the Society for Gynecologic Investigation.

In one study, researchers seeking to establish normal ranges of serum C-reactive protein (CRP) during pregnancy discovered that mean CRP values were elevated for both black and white women, establishing that normal pregnancy is an inflammatory state.

Surprisingly, however, they found that serum CRP values were much higher for black women than for white women, independent of maternal weight, and these differences persisted from earliest pregnancy through 26 weeks' gestation—the last point at which they were measured in the study.

"[By using a multivariate analysis mod-

el] ... we discovered that black race and sociodemographic characteristics were the strongest predictors of elevated CRP values [in pregnancy]," reported Dr. Amy H. Picklesimer, a fellow in maternal-fetal medicine at the University of North Carolina, Chapel Hill.

Meanwhile, a second study found highly significant differences in concentrations of tumor necrosis factor- $\alpha$  (TNA- $\alpha$ ) in black women who gave birth at less than 37 weeks, compared with black women who gave birth at term, but no differences between white women with preterm and those with term deliveries.

"These findings alone do not explain the racial difference in preterm birth rates between blacks and whites," Dr. Ramkumar Menon said, referring to the results of his study conducted at the Perinatal Research Center of Nashville, Tenn., in conjunction with Vanderbilt University, Nashville, and the North Atlantic Neuro Epidemiologic Alliance of Aarhus University (Denmark).

"However, they do suggest a substantial racial difference in one of the important hypothesized pathways," he said.

The two studies were featured in an oral scientific session on parturition.

Dr. Picklesimer and associates conducted a secondary analysis of a cross-sectional study of 775 women aimed at assessing oral health in pregnancy. Highly sensitive ELISA assays were used to characterize CRP values in serum specimens drawn prior to 26 weeks in the cohort, which consisted of 48% white women, 46% black women, and 6% women of other ethnicities.

CRP is an acute-phase reactant produced in response to stress, trauma, or other stimuli. In non-pregnant women, it is increasingly viewed as an important noninvasive marker of vascular inflammation relevant to cardiovascular disease, with a threshold of more than 3 mg/L deemed to indicate high risk, she said.

The median serum CRP in pregnant women surpassed that threshold, at 4.8 mg/L, with an interquartile range of 0.63-15.7 mg/L.

Among white women, median CRP values were significantly higher in the second trimester than in the first.

Black women had much higher values than white women at enrollment (7.68 mg/L vs. 2.59 mg/L), and these values remained persistently elevated in the second trimester.

Statistical analysis determined that black race was the characteristic most strongly associated with CRP values in the 75th percentile, along with maternal weight at enrollment, eligibility for the Women, Infants and Children nutrition program or food stamps, lack of private insurance, unmarried status, and previous preterm birth.

A multivariate analysis confirmed the independent association of black race and socioeconomic factors, even when statistical adjustment was made for known associations such as maternal weight.

"The most important implication of

our result is to caution investigators and clinicians in their interpretations of CRP values in pregnant women and to illuminate the important influence that socioeconomic characteristics seem to have on these values," Dr. Picklesimer said.

She postulated that genetic polymorphisms could play a role in the disparity.

"Another explanation may lie in the broader social and environmental differences observed between racial groups ... [with] elevated CRP [resulting] from chronic stress caused by a lifetime of socioeconomic disadvantages," Dr. Picklesimer said.

Dr. Menon's group examined inflammatory markers during active labor in the amniotic fluid of

158 women (52 black women and 106 white women) who spontaneously delivered prior to 37 weeks and 175 women (87 black women and 88 white women) who delivered spontaneously at 37 weeks or beyond.

No significant differences were seen between black and white women in terms of demographic or clinical features such as fever.

Among all women, TNF- $\alpha$  concentrations were higher in amniotic fluid from preterm births; however, this difference was almost fully accounted for by black women.

Black women who gave birth early had a 22.5-fold increase in TNF- $\alpha$  concentration, compared with black women who had term deliveries, but there was no significant difference between white women who had preterm or at term deliveries.

The same pattern was seen in soluble TNF-receptor concentrations, Dr. Menon reported.

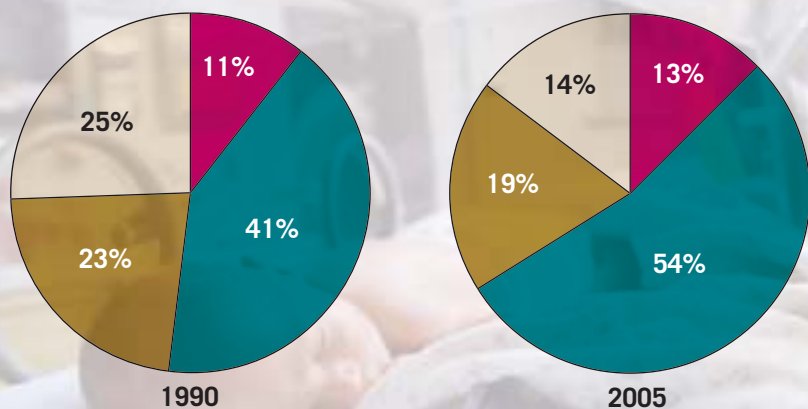
A high degree of disparity between black and white women in the molar ratio of TNF- $\alpha$  and soluble TNF-receptor concentration "may be indicative of a TNF- $\alpha$ -mediated pathological process of preterm birth in blacks, but maybe not in whites," he said at the meeting. ■

**Black race was the factor most strongly linked with CRP values in the 75th percentile, along with previous preterm birth and several social factors.**

## DATA WATCH

### Gestational Age at Birth Decreasing

■ <37 weeks ■ 37-39 weeks ■ 40 weeks ■ ≥41 weeks



Source: Centers for Disease Control and Prevention

ELSEVIER GLOBAL MEDICAL NEWS

## Predicting Parity Difficult, Affects Elective C-Section Advisability

BY SHERRY BOSCHERT  
San Francisco Bureau

SAN FRANCISCO — A woman's prediction of the number of children she will have in her lifetime often falls short, Dr. Kristie Keeton said in a poster presentation at the annual meeting of the Society for Maternal-Fetal Medicine.

An Internet survey asked women who said they had completed childbearing to look back to their first pregnancy and their thoughts at that time about how many children they planned to have.

Among 458 women who said they had planned on having one or two children, 41% were accurate, 16% had fewer children than they planned, and 42% had more children than expected, reported Dr. Keeton of the University of Michigan, Ann Arbor, and her associates.

Among women who had more children than predicted, 68% had three or more children.

The findings have implications for counseling of women who request cesarean delivery, which is a growing phenomenon, Dr. Keeton said in an interview at the poster.

A recent State of the Science statement by the National Institutes of Health said that "Cesarean delivery on maternal request is not recommended for women desiring several children," she noted.

The risks of placenta previa, accreta, and surgical complications increase with each C-section.

The current study suggests that at the time of first pregnancy, women are unable to predict their final parity.

This information should be incorporated into counseling of women who desire a primary

elective C-section, Dr. Keeton said.

The U.S. C-section rate for 2005 was over 30%, the highest rate ever, according to preliminary data from the National Center for Health Statistics, she noted.

Women in the present study were more likely to accurately predict their parity if they were older at the time of first pregnancy (25 years vs. 21 years) and if they had two siblings instead of three.

One flaw of the study design was that it could not take into account the potential for recall bias affecting respondents' answers.

Also, although all women said they had completed childbearing, it is possible that some may have future pregnancies, which would increase the proportion of respondents who underpredicted the number of children they would have.

Perhaps because the survey was conducted over the Internet, the demographics of the respondents were not representative of the general population: 74% of the women were white, 69% had at least some college education, and 70% were married or had a domestic partner. The mean age of respondents was 39 years. ■