

Increased serum creatinine levels in latent phase were associated with an increased risk of cesarean section due to failure to progress.

Geum Joon Cho, Min-Jeong Oh, Kyong A So, Yoon Kyong Oh,
Yu-Chin Paek, Soon-Cheol Hong, Hai-Joong Kim

Department of Obstetrics and Gynecology, College of Medicine, Korea University

Objectives (목적)

Creatinine is a chemical waste molecule that is generated from muscle metabolism. Muscle injuries cause a temporary increase in serum creatinine levels. It has been known that serum creatinine levels during the third stage of labor were statistically significantly higher than in the first stage or 72 h after delivery due to rhabdomyolysis during labor. It has been also known that prolonged latent phase is associated with increased risks for obstetric intervention. Therefore, we hypothesized that inefficient uterine contraction and prolonged latent phase resulting in failure to progress can increase serum creatinine levels by muscle injuries. The objective of this study was to evaluate the association between serum creatinine levels in latent phase and risks of cesarean section due to failure to progress.

Methods (연구 방법)

Women admitted in latent phase at between 37 weeks and 42 weeks' gestation with singleton fetus, and vertex presentation were recruited. Latent phase was defined as the cervical dilatation of 3 cm or less. We enrolled women had vaginal deliveries or cesarean section for failure to progress. Failure to progress included both arrest of dilatation and arrest of descent. We excluded women with a prior cesarean section or having cesarean section due to other indications (such as malpresentation). Serum creatinine levels were measured at admission. Women who had abnormal serum creatinine levels were also excluded. Normal serum creatinine levels were defined as a creatinine level less than 0.8 mg/dL. Ultimately, we enrolled 203 women, of 46 (22.7%) whom had a primary cesarean section due to failure to progress.

Results (결과)

Women who had cesarean sections had higher creatinine levels than women who had vaginal deliveries (0.55 ± 0.09 vs 0.51 ± 0.10 , $p=0.024$). Serum creatinine levels were categorized according to quartiles of distribution (Q1: creatinine <0.44 ; Q2: $0.44 \leq$ creatinine <0.50 ; Q3: $0.50 \leq$ creatinine <0.60 ; Q4: $0.60 \leq$ creatinine <0.80). In multivariate logistic analysis controlling for age, gestational age, parity, cervical dilatation, neonatal sex, and birthweight, women with serum creatinine levels in the fourth quartile showed increased risks for cesarean section due to failure to progress (OR 3.20, 95% CI 1.08, 9.52) compared to women with levels in the first quartile.

Conclusions (결론)

A high serum creatinine level in latent phase was associated with an increased risk of cesarean section due to failure to progress. These results suggest that increased serum creatinine level in latent phase may reflect inefficient uterine contraction and prolonged latent phase resulting in failure to progress.