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Elevation of uterine basal tone and fetal heart rate abnormalities after labor analgesia: a randomized controlled trial.

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OBJECTIVE: To estimate the effects of combined spinal-epidural and traditional epidural analgesia on uterine basal tone and its association with the occurrence of fetal heart rate (FHR) abnormalities.

METHODS: Seventy-seven laboring patients who requested pain relief during labor were randomly assigned to combined spinal-epidural (n=41) or epidural analgesia (n=36). Uterine contractions and FHR were recorded 15 minutes before and after analgesia. Uterine tone was evaluated with intrauterine pressure catheter. Primary outcomes were the elevation of baseline uterine tone and occurrence of FHR prolonged decelerations or bradycardia after analgesia. The influence of other variables such as oxytocin use, hypotension, and speed of pain relief were estimated using a logistic regression model.

RESULTS: The incidence of all outcomes was significantly greater in the combined spinal-epidural group compared with epidural: uterine hypertonus (17 compared with 6; $P=.018$), FHR abnormalities (13 compared with 2; $P<.01$), and both events simultaneously (11 compared with 1; $P<.01$). Logistic regression analysis showed the type of analgesia as the only independent predictor of uterine hypertonus (odds ratio 3.526, 95% confidence interval 1.21-10.36; $P=.022$). For the occurrence of FHR abnormalities, elevation of uterine tone was the independent predictor (odds ratio 18.624, 95% confidence interval 4.46-77.72; $P<.001$). Regression analysis also found a correlation between decrease on pain scores immediately after analgesia and the estimated probability of occurrence of hypertonus and FHR abnormalities.

CONCLUSION: Combined spinal-epidural analgesia is associated with a significantly greater incidence of FHR abnormalities related to uterine hypertonus compared with epidural analgesia. The faster the pain relief after analgesia, the higher the probability of uterine hypertonus and FHR changes.