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THE SIGNIFICANCE OF INTRA-ABDOMINAL PRESSURE
DURING CESAREAN SECTION UNDER SPINAL ANESTHESIA

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Topicality. It is a well-known fact that the spread of local anesthetic (LA) in the subarachnoid space is influenced by two main factors: the dose of LA and the volume of subarachnoid space. However, reduction in the dose of local anesthetic does not always prevent the development of a high spinal block and hypotension. As it clearly follows from the studies using magnetic resonance imaging, an increased intra-abdominal pressure (IAP) by obese and pregnant women is accompanied by a 16-18% decrease in the volume of cerebrospinal fluid in the lower thoracic and lumbar spine, which is one of the causes of a high cranial spread of LA when giving spinal anesthesia (SA).

Objective: to study the IAP effect on spinal blockade development and hypotension frequency by pregnant women under Cesarean section.

Materials and Methods. The study encompasses 196 pregnant women with 38-42 weeks' gestational period. IAP was measured prior to performing SA. After randomization into groups each comprising 85 pregnant women: in group 1 the LA dose was corrected considering height and weight, in group 2 the LA dose was corrected considering height, weight and IAP. Sensory block upper level and hypotension frequency as well as the LA dose and maternal anthropometric data were analyzed. Statistical significance was evaluated using the Student* and Mann – Whitney** criteria.

Results. 9.2% all women under study had a physiological norm of IAP (18), 49.5% - I degree IAP (97); 39.8 % - II degree IAP (78) and 1.5 % - III degree IAP (3). The groups were equal in terms of height, weight, BMI (**p> 0,05) and IAP (*p<0,05). The number of high spinal blocks (\geq Th4) in group 1 accounted for 40 % with the average block level of Th3 \pm 1, IAP of 22 \pm 3 cmH₂O and the LA dose of 11,6 \pm 1,9 mg, while by low spinal blocks with the average block level of Th6 \pm 1 (**p> 0,05), IAP was 20 \pm 3 cmH₂O (*p<0,05) and the LA dose was 11,5. In group 2 the number of high spinal blocks accounted for 23.5% (20), with the average block level at Th4 \pm 1 (**p> 0,05), IAP at 23 \pm 3 cmH₂O (**p> 0,05) and LA dose of 9,8. Hypotension in group 1 was recorded in 30.6% of cases, with IAP at 21 \pm 3 cmH₂O; in group 2 hypotension occurred in 15.3 % of cases, with IAP at 22 \pm 3 cmH₂O (** p> 0,05). On the whole the average dose of LA in the group 1 worked out at 11,6 \pm 1,9 mg, while in group 2 it was 17% lower, namely 9,6 \pm 1,6 mg (** p> 0,05).

Conclusion:

1. Only 9.2 % have normal values of IAP at the end of pregnancy. The combination of IAP \geq 22cmH₂O and obesity contributes to the development of high spinal block and hypotension.

2. The dose of LA, when giving anesthesia to pregnant women with a high risk of high spinal blockade, should be reduced by 20 % on average.