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EVALUATION OF ANESTHESIA-SURGERY STRESS IN CESAREAN SECTION BY EXAMINATION OF THE CATECHOLAMINES IN URINE

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The aim of this study was to examine the influence of the general inhalation anesthesia upon the stress reaction during Cesarean section (CS) by examination of the catecholamines in the urine of the patients.

The study was carried out in a group of 20 women aged between 20-40, all healthy, presented for elective CS. Of them, 12 were operated under general inhalation anesthesia, and 8 - under regional epidural anesthesia.

The general anesthesia was performed with IPPV with moderate hyperventilation $N_2O:O_2 = 2:1$, and succinylcholine until extraction of the foetus and after that halothane 0,5-1,0 vol.%, NLA and non-depolarizing muscle relaxant.

The epidural anesthesia was performed with 2% Lignocaine, the puncture site being L₁-L₂. Both groups were premedicated with Atropine 0,5 mg.

The quantity of adrenaline (epinephrine) and noradrenaline (norepinephrine) in urine was established by fluorometric method. Samples were taken before extraction of the foetus, after, and 24 h and 48 h later. As a control served the values of catecholamines of the same women obtained 3 or 4 days before surgery. We accepted as normal for epinephrine 0,00 - 0,56 $\mu\text{g/h}$ and for norepinephrine - 0.83-5,00 $\mu\text{g/h}$.

Our results show that before surgery there is no increase in epinephrine and norepinephrine in the urine of any woman. During surgery the data are different. In the general anaesthetic group there is a significant increase in 100% of the women ($n = 12$). This increase till the moment of foetus extraction is approximately 8-fold (mean values = $4,05 \pm 0,06 \mu\text{g/h}$).

After the foetus extraction, the level of epinephrine in the urine falls but it is still by 4 times higher than the normal (mean value = $2,41 \pm 0,2 \text{ mg/h}$). On the 24th h the values are about normal (mean value = $0,5 \mu\text{g/h}$) and on the 48th h - normal. In the control group with epidural anesthesia the values of epinephrine show a slight in-

crease.

This increase is insignificant (mean value = $0,85 \pm 1,1$ mg/h) and was observed in 37,5% of the women ($n=3$). On the 24th h epinephrine values are normal. In the rest women (62,5%) there is no significant change in the level of epinephrine.

The dynamic monitoring of norepinephrine values showed quite a different picture. In 60% of all the 20 women ($n=12$) there is no increase in its level - during or after surgery. In 40% ($n=8$) there is a slight increase and this refers only to women under general anesthesia (mean value = $1,68$ μ g/h).

The difference between norepinephrine values until the foetus extraction and after that is insignificant.

Analysing the results we conclude that CS under general anesthesia is linked with strain in the sympathoadrenal system (2,10), most obvious before foetus extraction. After that the supplement of halothane and NLA ensures the necessary anesthetic depth, the strain of SAS is reduced, and on the 24th h the catecholamine levels in urine are normal (1,3,9).

The significant difference in the values of epinephrine and norepinephrine in favour of epinephrine shows a greater activity of peripheral (hormonal) elements of SAS. According to Nikolov and Sudakov (1985), in aggression mainly norepinephrine is released in blood while in passive defence and fear epinephrine is released.

The results of the study prove that epidural anesthesia (EDA) ensures optimal conditions in reference to SAS reaction. In comparison with general anesthesia EDA protects better the autonomic nervous system during surgery at all stages of CS. This makes it a method of preference for elective CS (4,6-8).

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