

## Assessment of a Functional Condition of System “Hypothalamus-A Hypophysis-Bark of Adrenal Glands-Ovaries” at the Women Who Had Obstetric Bleedings

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**Abstract:** The postnatal period as a new physiological state is followed by the intensive neuroendocrine and neurohumoral reorganizations having character of adaptation and protective reactions. It is known that in the postnatal period two main processes involution of sexual system, on the one hand and emergence of functional activity of mammary glands with simultaneous formation and normalization of activity of ovaries with another are carried out. To these two main clinical manifestations of the postnatal period there correspond two opposite tendencies in hormonal reorganization of an organism: release of fabrics and bodies from hormonal influences of fruit and placental system and a disinhibition in these conditions hypothalamo-hypophysial ovaries systems with simultaneous formation of function of a lactation. The current of the postnatal period is influenced by character of the patrimonial act, existence of extragenitally pathology, obstetric complications at pregnancy and childbirth.

### INTRODUCTION

Among various obstetric complications arising in childbirth and the early postnatal period, bleedings continue to occupy one of the leading places of Chernukha and Fedorova<sup>[1]</sup> and Chernukha *et al.*<sup>[2]</sup>. Frequency of bleedings in afterbirth and early postnatal the periods fluctuates from 2.5-8% of Chernukha *et al.*<sup>[2]</sup>. Bleedings in the early postnatal period are observed in 2.2% of cases, for the first time the giving birth women bleedings develop in 0.3% of supervision, at the multigiving birth women in 4% of cases and more. At

postnatal bleedings the hysterectomy is made in 0.1% of cases, in 0.27% after operation of Cesarean section of Chernukha and Fedorova<sup>[1]</sup>.

In 2003 the frequency of bleedings during pregnancy in Almaty made 1.2-1.5%, the frequency of postnatal bleedings-1.0-1.2%, the specific weight of massive bleedings-27% of Dzhusubaliyeva, etc. In population of women of reproductive age of Almaty in 15.5% of cases obstetric complications (atonic bleedings, placenta pathology, a hem on a uterus, gap/perforation of a uterus, heavy gestosis were the reason of the radical operations.

One of the factors influencing growth of frequency of obstetric bleedings at the present stage is the increase in number of abdominal patrimonial permission of Kulakov, etc. Frequency of bleedings at abdominal patrimonial permission increased by 3-5 times in comparison with the spontaneous sorts<sup>[3]</sup>. By data of V.I. Kulakov, blood loss >1000 mL at Cesarean section meets by 14 times more often than at patrimonial permission in natural patrimonial ways of Kulakov, etc. With increase in number of the first Cesarean sections also frequency repeated abdominal patrimonial permissions increases. According to different authors it makes 50-68% of Serov<sup>[4]</sup>.

It is known that massive blood loss increases degree of operational risk, reduces organism resilience to an infection, leads to development of anemia and violations of coagulative ability of Strizhakov<sup>[5]</sup> blood.

By definition of WHO in 1990 Postnatal Bleedings (PB) are a loss of blood, equal 500 mL after the child's birth. Bleeding at abdominal patrimonial permission the blood loss exceeding 1000 mL is considered. More than 1.5% of body weight or >25-30% of OTsK, i.e., 1250-1500 mL (mean blood loss by massive bleeding at the body weight of the woman about 70 kg).

Among the usual endometrium of risk factors the instruction on the personal computer in the anamnesis is important: at pregnant women with the personal computer after first labor the risk of repeated bleeding increases by 3.5 times.

Adverse risk factors of development of obstetric bleedings are: age (for repeated childbirth-25 years are more senior, for first labor-30 years), an equal share (repeated childbirth, repeated childbirth), an interval between childbirth (<1 year and >6 years), existence of bleedings in the previous childbirth, the complicated course of pregnancy (a low placentation, prelying of a placenta, multiple pregnancy, uterus myoma are more senior).

The complications of pregnancy and childbirth associated with bleeding are only predictors of this complication. So, according to R.W. Stones and coauthors (1993), the frequency of prelying of a placenta made 13.1%, lengthening of the third period of childbirth-7.6%, a delay of a placenta and its parts in a uterus cavity-5.2%, a preeclampsia-5.0%, a mid lateral episiotomy-4.7%, multiple pregnancy-3.3%, weakness of patrimonial activity-2.9%, a trauma of soft patrimonial ways-2.0%, a large fruit-1.9%, long childbirth-1.7%, an operational vaginal patrimonial permission-1.7%, a median episiotomy-1.6%.

Among the complications of pregnancy increasing risk of obstetric bleeding it should be noted the pre lying of a placenta demanding certain organizational and diagnostic actions as the risk of bleeding increases in this situation by 13 times. The specialized help is also demanded by pregnant women with a heavy gestosis, multiple pregnancy, a large fruit. Other risk factors

are almost not predicted and arise directly in childbirth. The reasons of emergence hypotonic and the atonic of bleedings are insufficiency of a retraction the miometry and a tromboloid formation in vessels of a placental platform of Aylamazyan<sup>[6]</sup>, Persiyaninov and Molchanova<sup>[7]</sup>, Serov<sup>[8]</sup>, Chernukha<sup>[9]</sup>, Bonnar<sup>[10]</sup>, Drife<sup>[11]</sup>, McLintock<sup>[12]</sup> and Mousa and Walkinshaw<sup>[13]</sup>.

At primary atony of a uterus there is a complete cessation of tonomotoric function of a uterus and a normal metabolism which is clinically shown by continuous and massive arterial bleeding and the uterus constantly remains flabby and doesn't react even to powerful irritants. At a uterus atony conservative actions of a stop of bleeding as a rule don't yield result of Aylamazyan.

The long hemodilution therapy appointed at a number of conditions of pregnancy can lead to changes of the curtailing system of blood at pregnant women such as an antiphospholipid syndrome, existence of anti-HG of antibodies both hypo and isocoagulations, not characteristic at these terms of pregnancy. Such women it is necessary to carry to group of high risk of developing of bleedings of Strizhakov<sup>[14]</sup>.

Rescue of life of the woman and then prevention of the next and remote complications becomes the closest purpose of intensive therapy and sometimes and reanimations at massive bleeding. Early postoperative complications (within the first hours and the first month) are shown in the form of a koagulopathy of consumption, a sharp renal failure, infectious complications (infiltrates a parametry, vagina stump suppuration, pneumonia), a septic state and the expressed post-hemorrhagic anemia. To the remote complications (term of supervision of 4-8 years) a postcasration syndrome, persistent anemia, Shikhan's syndrome, an ovary cyst, a recidivous inflammation of appendages of Roman and Rebarer.

Thus, obstetric bleedings can lead to a number of the hardest complications which in turn can lead to a deadly outcome. Development of the DVS-syndrome, a renal failure, HELLP syndrome is especially dangerous.

Shikhan's syndrome or postnatal gipophytuitarizm belongs to postnatal neuroendocrine syndromes. True frequency of this pathology is unknown as it can proceed in the erased form under "mask" of hypofunction of a thyroid gland or even vegetovascular dystonia on hypotonic type. According to some information, the frequency of a syndrome of Shikhan makes 0.1% but after massive postnatal or post-abortive bleedings increases to 40%. Shikhan's syndrome develops at every fourth woman at the time of delivery after blood loss to 800 mL, at every second at blood loss to 1000 mL and at 75% of women with massive blood loss-to 4000 mL. Clinical manifestations arise quickly and sharply. The first sign is involution of mammary glands and lack of a lactation. In the postnatal period often there are an adynamy, apathy and hypotension. Then hair on a pubis and under mice drop out, there are also other general signs of a hypopituitarism.

If not to diagnose this state and in due time not to begin replacement therapy, the lethal outcome is possible. The pathophysiological basis of a necrosis of a hypophysis at some patients with postnatal bleedings isn't absolutely clear. During pregnancy the lobby sizes (but not back) shares of a hypophysis increase almost twice (with 500-1000 mg), mainly because of a hypertrophy and a giperplazy of lactotroph. The increased gland is more susceptible to the ischemia developing at postnatal bleeding which is followed by hypotension and shock. The important contributing factor is also the violation of processes of haemo coagulation which is often observed at pregnancy.

It is established that blood supply of a forward share of a hypophysis more than for 80% is provided with portal veins. The termination or fast reduction of a blood-groove in the top hypophysial vessels not only limits arterial blood supply but also leads to a blood-groove stop in portal veins. At significant increase in the sizes of a forward share of a hypophysis the increased supply with its oxygen is required, i.e., need for the strengthened blood supply increases, than and the susceptibility of body to the shock which is followed by hypotension and a gipovolemia speaks.

Hypopituitarism degree at a syndrome Shikhana is various. Partial or complete spontaneous recovery of functions of a hypophysis with possibility of the subsequent pregnancy is in certain cases observed. Reaction of a hypophysis to stimulation of GNRG can be normal, lowered or completely to be absent. It is explained by the sizes of a heart attack and various speed of regeneration of fabrics at different patients.

In V.N. Serov's work when studying a state of health of 253 women who at the time of delivery had a pathological bleeding (blood loss from 600-2000 mL) in 1-7 years 2 patients (0.8%) with the expressed clinical picture of insufficiency of gipotalamo-hypophysial system are after the delivery revealed, at some women separate signs of this insufficiency were noted; the dientsefalny syndrome proceeding as an illness of Itsenko-Kushinga is found in 1.6% of women. The assumption is made that bleeding during pregnancy and childbirth not only can be an etiologic factor concerning emergence of insufficiency of a hypophysis but also can promote development of other dientsefalny defeat.

Thus, obstetric bleedings are the main reason for maternal mortality and an invalidization of women as promote development of various pathological syndromes which frequency at 8-13 times more in comparison with the women in childbirth who had physiological blood loss and these changes remain throughout the long period (8-10 years) of Ammini, etc..

On modern representations the clinical symptomocomplexes which is developing after a hysterectomy with preservation of one or two ovaries,

characterized by psychovegetative and metabolic violations is united in a Postgisterectomic Syndrome (PGS). Every fifth woman during life is exposed to a hysterectomy. The greatest number of hysterectomies falls on the most social and active period of life of women. PGS sharply reduces quality of life of the woman. Frequency of loss of the function of ovaries leading to development of PGS fluctuates from 20-80% and depends on age of the patient, a premorbidny background, character of the accompanying pathology, the volume of surgical intervention, features of blood supply of ovaries. The surgical menopause and postovarioektomic syndrome take a special place among the estrogen the scarce of conditions of the woman, pathogenetic differing from an age menopause in one-stage total switching off of function of ovaries. The last caused faster development of both the early and late (delayed) stages of climacteric frustration, their heavier current.

Now consider that it is preferable to keep ovaries at any age as even after the termination of synthesis of an estrogen after a menopause within several more years ovaries develop androgens. Surgical switching off of ovaries in childbearing age is followed, besides irreversible loss of reproductive function, the difficult reactions of neuro and endocrine system characterizing process of adaptation of a female organism to new conditions<sup>[15]</sup>.

It is established also that the volume of operation influences the frequency of emergence and weight of a climacteric syndrome after a hysterectomy. Decrease in a blood-groove in the vessels feeding an ovary is more expressed at women after a total hysterectomy in comparison with a subtotal hysterectomy. Frequency of detectability of this pathology is directly proportional to lengthening of the postoperative period. In group of risk on development of a climacteric syndrome after a hysterectomy patients after a subtotal hysterectomy with a unilateral ovarioektomy and all patients after a total hysterectomy belong<sup>[16]</sup>.

Reproductive health of women after a resection of an ovary and a unilateral adnecsektomy is characterized by the maximum development the neyrodocrinially of frustration in 4-5 years of supervision. By Seleznyova and Selassiy<sup>[17]</sup> it is noted that at each third or fifth sick ambassador of a hysterectomy "inflow", irritability, a bad dream, fast fatigue were observed.

The termination of independent periods, irreversible loss of reproductive function mean for many women, besides loss of female appeal and "premature withering", "crash" of all her life, loss of its sense. Frequency of depressive violations at women after a hysterectomy makes 30-40%<sup>[18-20]</sup>.

In 1.5-2 at 50-60% of women signs of an urogenital atrophy develop. There is a dryness in a vagina which is often followed by an itch and burning. Dispaureynin a

combination to decrease or loss of a libido is conducted to sexual disharmony and in certain cases to impossibility of sexual life. Develop the atrophic vaginit, recidivoustsistouretrita, an urine incontience, increase of an urination, a nikturiya. According to these, Gimbel *et al.*<sup>[15]</sup> at research of patients in a year after an abdominal hysterectomy the incontience of urine is noted in 9% of cases after a total hysterectomy and in 18% of cases after a subtotal hysterectomy<sup>[21]</sup>.

In recent years the large number of works is devoted to studying of a condition of a neuro and vegetative and endocrine homeostasis after a hysterectomy. There are data on decrease in functional activity of ovaries, formation of a gipoestrogenny state after removal of a uterus at reproductive age. So, according to Vikhlyaeva in the early postoperative period the level of an estradiol decreases by 50-60% from initial and more expressed decrease happens after a total hysterectomy. Authors connect hypoestrogeny in the early postoperative period with an operational trauma, the arising hypostasis of fabrics and deterioration of blood supply of ovaries in view of the termination of a blood-groove on ovaries branch of a uterine artery. It is followed by increase in volume of ovaries by 1.7 times, decrease in their echogennost at sonografic research after operation and also decrease in indicators of a ovaries blood-groove in the early postoperative period.

Further, in 6 months after a hysterectomy, improvement of an anatomo-functional condition of ovaries that the ekhografic of indicators and data of a dopplerometry is expressed in restoration of a blood-groove, improvement (the volume of ovaries is normalized, there are full-fledged follicles) that is explained by development of a collateral blood-groove and restoration of normal blood supply of ovaries is noted. Normalization of blood supply of ovaries is followed by restoration of level of an estradiol in blood, prevalence the ovulative of menstrual cycles with a full-fledged luteinum phase. Faster and complete recovery of function of ovaries is observed after a subtotal hysterectomy. However, at further supervision (in a year and more after a hysterectomy) progressive deterioration of function of ovaries, in particular reduction of their volume due to reduction of number and the size of follicles, deterioration of blood supply of ovaries, decrease in a blood-groove in the pool of an internal ileal artery, especially at the women who transferred a total hysterectomy is established. And the most expressed changes are observed in 5 years after operation<sup>[22]</sup>.

At women at the age of 29-43 years in 3-5 years after a hysterectomy decrease in level of an estradiol is revealed in 34%, increase of the FSG level of 25% of cases. Some researchers connect the arising changes not

only with insufficient development of a collateral blood-groove but also with removal of one of links of the self-regulating system. It is supposed that biologically active agents synthesized by a uterus influence various links hypothalamo-hypophysialovaries systems. There is a point of view that removal of one of links of the self-regulating system involves violation of activity of the remained links of this system, first of all, of ovaries.

Deterioration of an anatomo-functional condition of ovaries with development of a gipoestrogeny is clinically shown at women of reproductive age in the remote postoperative period by the menopausal symptomatology which was more expressed the ambassador of a total hysterectomy. So, Strizhakov, note emergence of neurovegetative, psycho-emotional violations, increase of level of uneasiness in the late postoperative period as a result of the hysterectomy executed at young age.

According to the researches by Cooper, a third of women of reproductive age in 3-5 years after a hysterectomy show complaints to urological frustration, including a day and night pollakiuriya, not deduction of urine at a tension, decrease in urethral pressure that testifies to formation of inferiority of the urethral mechanism of deduction of urine, often combined with omission of walls of a vagina and education to cystocele. These changes develop against a gipoestrogeny and probably are connected with dystrophic processes in paraurethral fabric, an epithelium of a vagina and urethra, the receptor device<sup>[22]</sup>.

The hysterectomy has negative impact on sexual function, partly in connection with the formed gipoestrogeny and decrease in level of testosterone. So, according to Tereshkina *et al.*<sup>[22]</sup>'s data, at 25% of women after removal of a uterus reduction of a sexual inclination is observed, at 24% dryness of a vagina, at 17% pains is noted during sexual intercourse, at 39% disappearance of an orgasm. Besides after a total hysterectomy anatomic changes of a shape of a vaginal stump are connected with education in it cicatricial fabric and damage of a uterine and vaginal nervous texture<sup>[22]</sup>.

Thus, definition of influence of a hysterectomy at reproductive age on a condition of female health demands continuation of researches, selection of methods of an assessment of the arising pathological states and methods of their treatment. Therefore studying in dynamics of some indicators of a hormonal background at the women who had obstetric bleedings after conservative and surgical methods of treatment is represented to us actual.

## MATERIALS AND METHODS

The purpose of an assessment of a functional condition of system "hypothalamus-hypophysis-bark of

adrenal glands ovaries” at the women who had obstetric bleedings, we examined 30 women who had massive postnatal bleedings with a surgical hemostasis (the main group), 30 women who had massive postnatal bleedings with a conservative hemostasis (group of comparison) and 30 women in childbirth with physiological blood loss (control group) for 5-6 days after the delivery by the end of the postnatal period in 6, 12 and 18 months after the delivery. We conducted research of some indicators of the hormonal status at women of the main group, group of comparison and control group in dynamics: indicators of function of a hypophysis-Prolactinum, LG, FSG, TTG; hormones of bark of adrenal glands a cortisol and Degidroepiandrosteron-Sulfate (DGEA-S) and sexual steroids: oestradiol and progesterone.

The intake of peripheral blood was made for definition of indicators of hormones. Concentration of hormones was defined in serum of blood of the person by method of the solid-phase immunofermental analysis.

### RESULTS AND DISCUSSION

In the analysis of age structure of women in childbirth of the main group of 75% of women were optimum reproductive age, 30% of pregnant women were primipara, 10%-multigiving birth. The 70% of women had the burdened obstetric and/or gynecologic anamnesis. Various ekstragenitalny diseases were noted at 55% of pregnant women. The 80% of women were made by operation Cesarean section, from them a half prematurely. Almost at 90% of percent of women pregnancy proceeded against various complications (Fig. 1).

Apparently from the presented figure hypertensive states (60%), an abnormal arrangement of a placenta (30%), antenatalny death of a fruit (15%), a premature peeling of normally located placenta (20%) were the most frequent complications of pregnancy.

The main indications to an operational patrimonial permission were pathology from a placenta (65%), a hem on a uterus (10%), clinically narrow basin (5%) and the combined indications (age, OAA, the induced pregnancy, a large fruit, etc.) 20%.

The 85% to women the hysterectomy, from them 15% bandaging internal the ileal of arteries is made. Outcomes for newborns were the following: most of newborns (68.9%) were born in a satisfactory condition. Early neonatal mortality made 10% (the reason prematurity, asphyxia of heavy degree, fruit SDR). At 10% of women are registered postoperative complication in the form of a hematoma of a postoperative bed.

For studying of pathogenetic mechanisms of violations of a somatic state at women after obstetric bleedings we determined immunological parameters of a homeostasis in dynamics of supervision. Investigated a fenotypic profile of lymphocytes for 5-6 day of the postnatal period by the end of the postnatal period (42 day), in 6 months of supervision in 12 and 18 months. The received results showed (Table 1) that in all groups of research the hyperprolactinemy and the increased cortisol level was noted. The physiological hyper prolactinemy is more characteristic for women in childbirth with normal blood loss of  $1384.3 \pm 290.6$  mL and moderate obstetric bleedings of  $1135.4 \pm 110.5$  mL in comparison with women in childbirth who transferred a hysterectomy concerning massive bleedings of  $1108.2 \pm 298.4$  mL.

Table 1: Hormonal indicators in the studied groups for 5-6 days after the delivery

Indicator	Main group	Group of compare	Control group
Prolactin	1108.2±298.4**	1135.4±110.5**	1384.3±290.6
Cortisol	736.7±172.1*	582.4±149.5**	358.8±80.1
LG	0.57±0.24*	0.27±0.15*	1.59±0.38
FAG	4.6±1.3**	2.21±0.32**	3.83±0.22
DGEA-S	2.12±0.61**	2.21±0.68**	2.25±0.63
Progesteron	16.81±3.44**	18.28±3.87**	19.85±3.12
Estradiolum	806.35±174.97**	831.27±200.5**	937.17±196.5
TTG	1.099±0.268*	0.445±0.113**	0.341±0.11

\*p<0.05; \*\*p>0.05

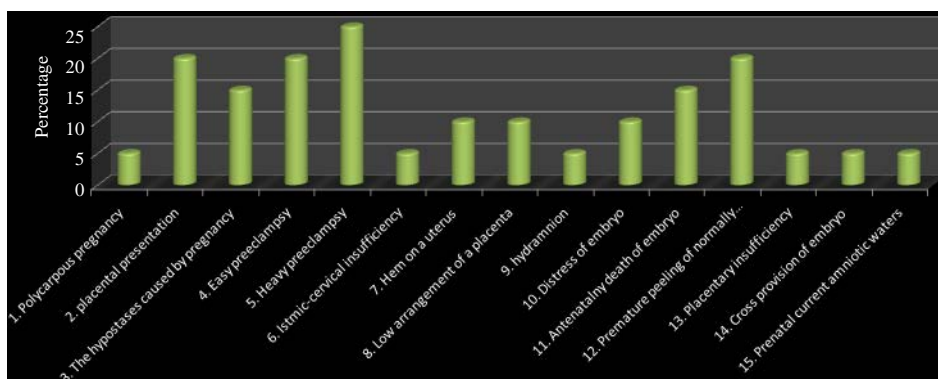


Fig. 1: Complications of pregnancy at women of the main group (the transferred massive obstetric bleedings, %)

Also at all examined women increase of level of a cortisol was noted. In the studied, situation the cortisol can be considered as the main hormone defining the answer of an organism to a stress. As all examined women had a patrimonial stress and women in childbirth with a hysterectomy also a volume surgical trauma, it is necessary to expect the increased reaction of bark of adrenal glands for maintenance of a homeostasis of an organism. So, the reliable increase in a cortisol ( $p < 0.05$ ) is especially, expressed at the women in childbirth who transferred a hysterectomy in connection with massive blood loss of  $736.7 \pm 192.1$  mL in comparison with group of comparison of  $358.8 \pm 80.1$  mL and control group  $582.4 \pm 149.5$  of mL.

Such increase in a cortisol at women of the main group is apparently connected not only with a patrimonial stress but also with an operational stress and nature of organ-preserving operation at gynecologic healthy women. The main function of increase of a cortisol in blood is the adaptive answer of an organism to acute or chronic stress. However long hyper secretion of a cortisol shifts a metabolism towards catabolic processes.

DGAE-S is present at tissues of a brain and is considered as a neurosteroid. Decrease in level of the circulating DGAE-S and according to DGAE-S/ratio a cortisol, is associated with such violations of TsNS as a depression, memory violations, a syndrome of chronic fatigue and others.

So, in our research in all three groups the DGAE-S level was approximately identical and made  $2.124 \pm 0.61$  in the main group,  $2.21 \pm 0.68$  in group of comparison and  $2.249 \pm 0.625$  in control group. Thus it was tended to decrease in DGAE-S at women with a hysterectomy. DGAE-S/ratio made a cortisol in the main group 0.002, in group of comparison 0.003 and in control group 0.006. Thus, at the women who had massive postnatal bleedings development of disorders of adaptation is possible.

The decrease in LG at all women in childbirth which is especially expressed at the women who had massive postnatal bleedings is noted:  $0.57 \pm 0.24$  in the main group and  $0.27 \pm 0.15$  in group of comparison and in control group this indicator made  $1.59 \pm 0.38$ .

The FSG level was in all three groups of researches within norm for women of reproductive age, at the same time the FSG level was the highest at women with a hysterectomy. Doubtful decrease in a progesterone in the main group of research ( $16.81 \pm 3.44$ ) in comparison with control group ( $19.85 \pm 3.12$ ) and group of comparison was noted ( $18.28 \pm 3.87$ ). Thus, progesterone level in all three groups of research corresponded to the second phase of a menstrual cycle.

At the same time decrease ( $p < 0.05$ ) estradiol at the women who transferred pathological blood loss in comparison with normal childbirth was noted. So, in the main group of research this indicator made

$806.35 \pm 174.97$ , in group of comparison -  $831.27 \pm 200.5$ , while at women with physiological blood loss  $937.17 \pm 196.5$ .

Reliable increase of the TTG level at women in childbirth with pathological blood loss in comparison with women in childbirth with physiological blood loss was noted. So, this indicator in control group made  $0.341 \pm 0.11$  and in the main group and group of comparison  $1.099 \pm 0.268$  and  $0.445 \pm 0.113$ , respectively.

Thus, as a result of research the physiological hyper prolactinemia, especially at women in childbirth after uncomplicated childbirth, the expressed increase of level of a cortisol at the women in childbirth who transferred a hysterectomy concerning massive bleeding, decrease in ratio DGAE-S/a cortisol at the women who had massive postnatal bleedings is established. Also increase of the FSG and TTG level at the women who transferred a hysterectomy is noted, at the same time the LG level and an estradiol at them is lowered.

According to Bergman by the end of the 1st month of the normal postnatal period concentration of LG comes nearer to the level of its basal secretion in a follicular phase of a normal menstrual cycle by 42nd day the maintenance of LG is equal to its basal secretion in a stage of regress of a yellow body. The maintenance of FSG by the end of the 1st month and even by 42nd day after the delivery remains to lower, than in early and late stages of a follicular phase but comes nearer to its average concentration in a luteal phase of a normal menstrual cycle. The gonadotropin of hormones by the end of the 1st month of the postnatal period points to normalization of levels also Myasnikova. By 42nd day of the normal postnatal period the level of a progesterone and estradiol corresponds to that during the perioovulatory period of a normal menstrual cycle<sup>[1]</sup>.

In our research by 42nd day after the delivery at the women who transferred massive pathological blood loss in childbirth with a hysterectomy (Table 2) reliable decrease in level of Prolactin and a progesterone in comparison with control group and significant decrease in level of Prolactin (by 1.9 times) concerning group of comparison is revealed ( $p > 0.05$ ). Reliable increase of the FSG and TTG level at women of the main group in comparison with control is noted. In all groups, the level of a cortisol decreased to physiological figures but at the same time this indicator was higher at the women who underwent organ-preserving operation and in group of comparison ( $p > 0.05$ ). DGAE-S indicator in the main group made  $1.46 \pm 0.52$  that is slightly lower than standard indicators for women of reproductive age. DGAE-S/ratio made a cortisol in the main group 0.003, in group of comparison 0.006 and in control group 0.007.

In 6 months of supervision the tendency to increase in LG, FSG ( $p > 0.05$ ) and decrease in an estradiol ( $p < 0.05$ ) and a progesterone was also noted ( $p > 0.05$ )

Table 2: The hormonal status in the studied groups by the end of the postnatal period

Indicators	Main group (massive aggressive bleeding+ hysterectomy)	Group of compare (massive aggressive bleeding+ without hysterectomy)	The control group (the physiological blood loss)
Prolactin	490.12±170.5*	935.4±210.5**	1102.7±205.3
Cortisol	391.98±119.3**	328.6±121.3**	297.3±92.4
LG	2.3±1.4**	1.86±0.93**	2.12±0.85
FSG	7.04±0.82*	2.01±0.35**	2.76±0.41
DGEA-S	1.46±0.52**	1.98±0.57**	2.25±0.56
Progesteron	5.17±1.29*	10.32±2.95**	11.63±2.54
estradiolum	386.06±96.3**	547.34±147.1**	612.23±152.1
TTG	0.746±0.197*	0.364±0.113**	0.258±0.11

\*p<0.05; \*\*p>0.05

Table 3: The hormonal status in the studied groups in 6 months after the birth

Indicator	Main group	Group of compare	Control group
Prolactin	469.2±151.6*	501.7±135.7**	915.3±120.4
Cortisol	344.8±92.1**	285.3±78.3**	265.8±85.2
LG	4.3±1.3**	3.1±1.5**	3.7±1.4
FSG	8.6±2.73**	3.41±1.3**	4.5±1.5
DGEA-S	1.04±0.63**	1.39±0.56**	1.52±0.57
Progesteron	3.98±1.1*	5.3±1.9**	8.4±3.1
Estradiolum	243.06±83.6**	396.2±103.4**	457.8±136.3
TTG	0.85±0.09*	0.65±0.08*	0.37±0.11

Table 4: The hormonal status in the studied groups in 12 months after the birth

Indicator	Main group	Group of compare	Control group
Prolactin	352.4±123.4**	489.2±112.7**	517.4±110.9
Cortisol	327.4±89.5**	275.3±90.1**	283.2±88.3
LG	5.1±1.5**	3.9±1.1**	4.2±1.8
FSG	7.4±2.73**	4.87±1.32**	5.3±2.22
DGEA-S	0.85±0.35*	1.57±0.27**	1.65±0.29
Progesteron	1.72±0.8**	1.89±0.93**	1.4±0.78
Estradiolum	415.16±83.6**	579.8±200.5**	631.5±196.5
TTG	1.64±0.45**	1.31±0.52**	1.12±0.58

\*p<0.05; \*\*p>0.05

(Table 3). DGEA-S/ratio made a cortisol in the main group also 0.003 and in group of comparison 0.004 and in control group 0.005.

In a year after the delivery (Table 4) some alignment of indicators of a hormonal background of the women who had massive obstetric bleedings and at women with physiological blood loss in childbirth is revealed. At the women who had massive obstetric bleedings with removal of genital body the tendency to increase of FSG (7.4±2.73) in comparison with group of the women who had massive obstetric bleedings with preservation of genital body (4.87±1.32) and group of women with physiological blood loss in sorts (5.3±2.22) is established. Reliable decrease in the DGEA-S level in the main group of research in comparison with women without hysterectomy that found reflection in the ratio of DGEA-S to a cortisol is also noted. So, this indicator in the main group made 0.003, in group of comparison 0.005 and in control group 0.005.

In 1.5 years of supervision of a reliable difference in the hormonal status of women of the studied groups it is noted (Table 5). But at the same time the tendency to increase of LG and FSG at the women who transferred a

Table 5: The hormonal status in the studied groups in 18 months after the birth

Indicator	Main group	Group of compare	Control group
Prolactin	264.4±92.3**	308.5±112.7**	324.1±115.1
Cortisol	402.7±142.5**	237.1±95.5**	254.6±88.9
LG	4.3±1.2**	3.0±1.1**	3.6±1.5
FSG	6.8±2.3**	4.75±1.9**	5.1±2.0
DGEA-S	1.72±0.23**	1.85±0.31**	1.96±0.25
Progesteron	1.3±0.7**	1.7±0.8**	1.6±0.7
Estradiolum	397.2±83.6**	513.5±200.5**	584.7±196.5
TTG	0.96±0.29**	0.63±0.21**	0.57±0.19

\*p<0.05; \*\*p>0.05

hysterectomy in connection with massive blood loss in sorts (6.8±2.3) in relation to group of comparison (4.75±1.9) and to control group (5.1±2.0) (p>0.05) is revealed. The similar situation was observed and concerning LG. So the LG level in the main group made 4.3±1.2, against 3.0±1.1 in group of comparison and 3.6±1.5 in control group (p>0.05). Cortisol level in the main group was 1.6 times higher, than in control group (p>0.05). The DGEA-S level in the studied groups didn't differ (p>0.05). DGEA-S relation to a cortisol in the main group made 0.004, in group of comparison 0.007 and in control group 0.007. At the women who remained without genital body as a result of massive obstetric bleeding the doubtful tendency to decrease in level of a progesterone and an estradiol in comparison with women with the kept genital body was noted. There was some increase of the TTG level for women of the main group 0.96±0.29, in comparison with control group 0.57±0.19 and group of comparison 0.63±0.21.

When comparing level of Prolactinum in dynamics in 18 months after the delivery the highest level is noted (Fig. 2) at women with physiological blood loss (control group) and its decrease in process of supervision takes place smoothly. At women of the main group, i.e. transferred massive blood loss with a surgical hemostasis Prolactinum level sharply decreases by the end of the postnatal period (more than twice) that is undoubtedly negatively reflected in a lactation. Further smooth decrease in level of the studied hormone is observed. At supervision over group of comparison (the woman the transferred obstetric bleedings with a conservative hemostasis) sharp decrease in level of Prolactinum in half a year is noted (more than twice). Thus, at women with



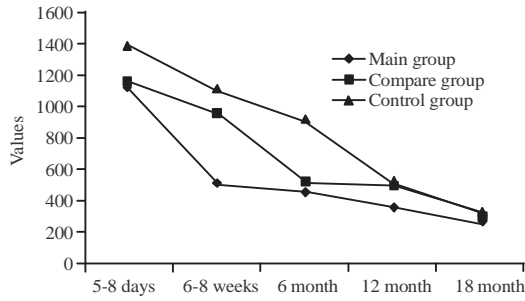


Fig. 2: Level of Prolactinum in the studied groups of women in dynamics

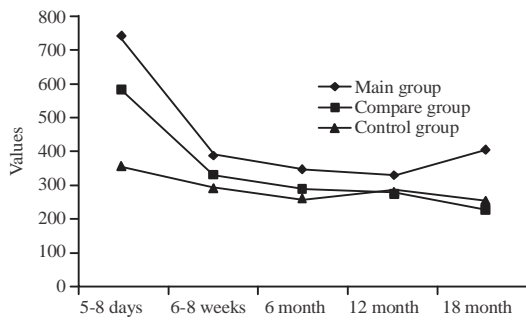


Fig. 3: Cortisol level in the studied groups of women in dynamics

normal blood loss in childbirth the physiological hyper prolactinemia which decrease in level in process of supervision happens smoothly that is necessary for normal functioning of mammary glands is noted. In groups of the women who had obstetric bleedings sharp decrease in level of Prolactinum by the end of the postnatal period and in 6 months after the delivery is noted.

At all examined women the increased level of a cortisol (Fig. 3) as all examined women had a patrimonial stress and women in childbirth with a hysterectomy also a surgical trauma was noted. But at normal childbirth cortisol level for 5-6 day of supervision was much less, than at pathological childbirth, so at women of the main group the level of a cortisol was higher more than twice and women in childbirth have groups of comparison by 1.6 times. In process of supervision decrease in level of a hormone of a stress in all groups of research was noted, thus in control group there was a gradual decrease with insignificant rise in 12 months of supervision. In the main group and group of comparison by the end of the postnatal period sharp decrease in a hormone of a stress was noted: by 1.9 times and 1.8 times respectively. In process of supervision, in group of comparison further decrease in level of a cortisol and in the main group by the end of research was noted (in 18 months) the notable increase in the studied hormone by 1.6 times in comparison with control group and 1.7 times in

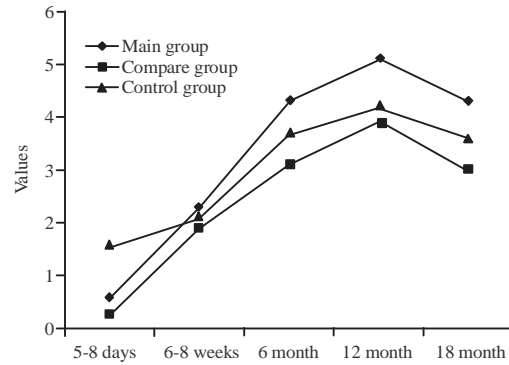


Fig. 4: LG Level in the studied groups of women in dynamics

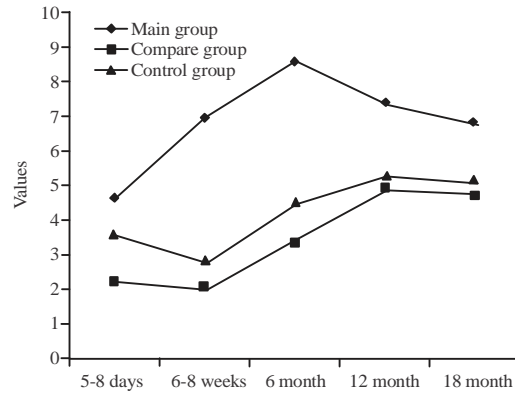


Fig. 5: FSG Level in the studied groups of women in dynamics

comparison with the second group of women was observed. Such increase in a cortisol at women of the main group in 18 months of supervision is perhaps connected with the mental and somatic status in connection with loss of women's specific body as a uterus.

In process of supervision in all studied groups there is a growth of the LG level about a year of supervision, then there is an insignificant decrease by 1.5 years of supervision (Fig. 4).

At research of the FSG level in dynamics within 1.5 years the reliable increase in the main group on comparison with the second and third group of researches (Fig. 5) is noted. And the sharp increase till 6 months, with gradual decrease by the end of supervision is noted. In other groups, on the contrary, declines some decrease in the FSG level of the postnatal period with further gradual increase.

Dynamics of level of an estradiol in the studied groups is shown in Fig. 6. Thus, in all groups of women decrease in an estradiol to 6 months of supervision is noted, thus, the lowest level is noted in the main group.



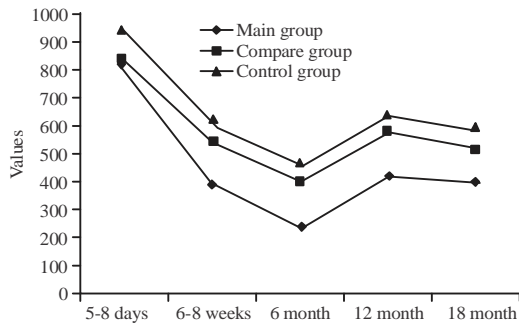


Fig. 6: Level of an estradiol in the studied groups of women in dynamics

By a year of supervision at all women moderate raising of the studied hormone with insignificant decrease by the end of research is noted.

### CONCLUSION

At dynamic research behind a condition of a hormonal homeostasis at women with pathological blood loss in childbirth decrease in Prolactin, DGAE-S, progesterone and estradiol is noted, at the same time the increase in level of a cortisol, TTG, LG and FSG is noted. As decrease in the DGAE-S level and according to DGAE-S/ratio a cortisol was already noted earlier, associated with such violations of TsNS as a depression, memory violations, a syndrome of chronic fatigue and others.

Thus, at the pathological childbirth which is followed by bleeding the hormonal imbalance which remains till 1,5 years of supervision is noted that undoubtedly negatively influences a somatic and mental condition of women and carrying out rehabilitation measures demands.

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