

MINISTRY OF HEALTH OF THE REPUBLIC OF UZBEKISTAN

**ROLE OF ENDOGENOUS INTOXICATION IN MOTHER -PLATCENTA- FETUS
SYSTEM AT ABO-IMMUNIZATION AND METHODS OF ITS CORRECTION**

Methodical recommendations

Tashkent – 2012

MINISTRY OF HEALTH OF THE REPUBLIC OF UZBEKISTAN

Tashkent medical academy

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Deputy head of department of coordination

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_____ Gulyamov T.D.

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"ARGUE"

Chief of Head Department

educational institutions MH RUz

_____ Atakhanov Sh.E.

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ROLE OF ENDOGENOUS INTOXICATION IN MOTHER- PLATCENTA- FETUS SYSTEM
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Development organization: Tashkent medical academy

Originators:

D.K.Najmutdinova – the doctor of medical sciences, professor of obstetrics and gynecology on GP preparation TMA.

A.A.Sarukhanova – Candidate of medical sciences, docent, obstetrics and gynecology on GP preparation TMA.

N.M. Magzumova – the doctor of medical sciences, professor of obstetrics and gynecology on GP preparation TMA.

G.Z. Choriyeva – assistant of obstetrics and gynecology on GP preparation TMA.

Reviewers:

Sultanov S.N. – director Research activity of a science of obstetrics and gynecology MH RUz, doctor of medical sciences, professor.

Babadjanova G. S. – doctor of medical sciences, professor, obstetrics and gynecology for medical and medico-preventive faculty of TMA

Methodical recommendation:

It is considered by the Problem commission on «Maternity and childhood protection»

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Scientific secretary of TMA,

docent

F.I.Salomova

Methodical recommendations are made on the basis of synthesis of data of literature of results of characteristic scientific researches and intended for doctors the obstetrics -gynecologists, doctors of GP, students and residents of medical schools.

INTRODUCTION

During pregnancy between organisms of mother and a fetus the composite immunobiological interrelations which make fixed impact on nucleus development, on the course of pregnancy and post-natal development of the newborn are established.

Immunologic relationship of mother and fetus are formed within a uniform system of functions where a backbone factor is optimal development of a nucleus (Abdrakhmanov L. River 2003, Pertseva G. M., 2004).

Under certain conditions this immunologic relationship is beyond physiological and develops into immunodisputed pathologies of pregnancy bringing to development and a fetus (Antashyan G. G. 2008).

Now immunologic relationship of mother and a fetus are a subject of studying of physiologists, immunologists, perinatologist, accoucheurs-gynecologists. In this regard one of actual problems of immunization of mother to system antigens a Rhesus factor and ABO of a fetus is a hemolytic diseases of a fetus (HDF) and newborn (HDN).

The share of HD in perinatal mortality makes from 2 % to 6-7 %. In 20-25 % of all cases of pregnancy incompatibility of mother and a fetus on ABO system (60 % of all cases of HDN) takes place.

Untimely diagnostics and inadequate therapy leads to the invalidism of the child caused by neurologic violations, somatic frustration, changes of an immunologic reactivity, the fetal death of a fetus (Rosenfeld B. E.1995, Oepkes D.2006) is possible.

By researches of the last years it is proved that in blood of immunization pregnant women there is an increase in the maintenance of a xanthine oxidase, ratio sizes uric acid / allantoin, the loose arachidonic acid and products of its oxidizing metabolism. Activization of these processes promotes accumulation in blood biologically the fissile substances (toxic metabolites), to violation of functioning of bodies of a biotransformation and, as a result, development of a syndrome of endogenous intoxication at all levels systems mother-placenta-fetus.

Toxic metabolites, in turn, are one of activators of immune system, and precede a biosynthesis of antibodies.

All endotoxins can be divided into two larger groups – oligopeptides (OP) which are forming at a proteolysis of proteins, and not peptide substances with a low and average molecular mass (SLAMM). Both indexes of an endotoxemia at the strong degree of intoxication increase several times (Antashyan G. G. 2008, Aksenova V. M., 1998). Now by the majority of authors of substance of a low and average molecular mass (SLAMM) are considered as the

generalpurpose markers of endogenous intoxication. Determination of concentration SLAMM in biological environments of an organism is one of the most informative and available ways of an assessment of expressiveness of EI and is an objective assessment of a condition of system the mother-placenta-fetus, criterion of risk of development of a placental failure. Collecting MAM, well getting through a placental barrier, are capable to make immediate toxic impact on a fetus, causing multiorgan violations of different character.

To alarm modulators of receptor systems carry oligopeptides (OP) which are forming at a proteolysis of proteins, into which structure enter Thyrosinum - and triptofan peptides (TZP and Chamber of Commerce and Industry) (Aksenova V. M., 1998, Smirenina I. V., 2000).

Preventive treatment to allow to lower level of endogenous intoxication of an organism of the pregnant woman, to remove toxicants from an organism of the pregnant woman, but also considerably to improve a condition of bodies and systems of natural detoxicating, to improve blood circulation in system a mother-placenta-fetus, that is to prevent progressing of a placental failure, to prolong pregnancy and to receive more viable posterity.

Creation of new medicinal preparations falls into to the natural processes caused by searching of the most effective remedies for treatment of diseases. In structure of new medicinal preparations include both again synthesized active materials, and combinations of well-known pharmacological tools. The combined preparations found "niche" at the heavy course of diseases, polymorbidity, and also low commitment of patients to medicamentous treatment.

The foregoing, defines a practical significance of further improvement of existing methods of efferent therapy.

Results of characteristic researches.

Diagnosis ABO-konflikt was established on the basis: obstetric anamnesis, clinical manifestations, biochemical and immunohematological indexes, this ultrasonography, KTG and Doppler velocimetry.

For performance of objectives of research under our supervision there were 65 pregnant women with ABO the conflict in a duration of gestation from 16 to 38 weeks:

1 group – 32 pregnant women and 26 newborns with ABO the conflict received traditional nonspecific desensitizing therapy: glucose of 40 % - 20,0 ml with Acidum ascorbinicum of 5 % of 6,0 ml, sodium bicarbonate of 4 % - 100,0 i.v. driply No. 3, glucose of 5 % - 400,0 No. 3, vitamins of B1 6 %-2,0 in/m, Aevitum of 0,1 capsules 3 times per day, a methionine of 0,5 g 3 times per day, Rutinum of 0,02 g 3 times per day, Diazolinum of 1,0 g 3 times per day, Curantylum of 0,025 g 3 times per day. Traditional therapy was carried out from

term of establishment of the diagnosis of ABO of the conflict three times to durations of gestation: 16-18; 24-26; 36-37 weeks within 10 days.

2 group - 33 pregnant women with ABO the conflict and 31 newborns received complex traditional therapy with preparation inclusion cocarnitum. The preparation cocarnitum was applied since 16 weeks of a gestatsiya – on 2,0 ml daily intramuscularly 10 days three times during supervision.

We carried out the retrospective analysis of 27 stories of childbirth with ABO the conflict not receiving treatment during pregnancy concerning already available immunization on ABO to system.

Vomiting of pregnant women at ABO the conflict complicated the course of pregnancy in 1,8 times more often than in group of monitoring.

Hypertensive violations during pregnancy in hypertensia induced by pregnancy (HIP).

77,8 % had all these complications of a course of this pregnancy at clinically and instrumentally diagnosed FPI, and at 63,0 %, FPI was against IUI, more often a with etiology. These indexes exceeded those groups of monitoring in 1,9 (IUI) and 3,3 times (FPI).

The isosensitization to group factors isn't indifferent for the pregnant woman and, as a rule, plays a starting role in development of a number of complications. At the same time these complications, strengthening a transmittivity of a placentary barrier, aggravate weight of manifestation of the immunoconflict.

At pregnant women with ABO the conflict notes high frequency of a premature rupture of a bag of waters – 44,4 % that is more often in 2,2 times compared with group of monitoring. premature amotio of normally located placenta (PANLP) as the heaviest obstetric complication, at ABO the conflict was noted almost at a half of women in labor (48,1 %), FPI probably bound to high frequency (77,8 %). Weakness of patrimonial activity was only in group with ABO the conflict (14,8 %). manual inspection of a cavity of the uterus (MICU) concerning the defect of a placenta which was probably bound to high percent of IUI, was available more than in 2 times more often than group of monitoring. Hypotonic bleeding in the afterbirth and early puerperal.

Perinatal mortality in group from ABO the conflict which were not receiving treatments met in the 10th time more often than in group without immunization (3,3 and 33,3 % respectively). In identical percent of cases (14,8 %) took place antenatalny and a postnatal mortality, and intranatal made 3,7 %.

Thus, generalizing as a whole the carried-out retrospective analysis of a course of pregnancy, childbirth, the puerperal period and a condition of newborns at pregnant women with ABO the conflict not receiving treatment during pregnancy, showed the complicated current of a gestatsiya, childbirth, and high percent of perinatal losses.

The current and outcome of pregnancy, childbirth and the puerperal period at 32 pregnant women with ABO the conflict of 2 groups receiving traditional therapy showed that on all developed complications there were best indexes, but all of them equally considerably exceeded indicators of group of monitoring, i.e. at pregnant women of not having ABO of the conflict. It was shown by decrease in frequency of complications of pregnancy and childbirth at women of 2 groups. In 2 times less often at this contingent of pregnant women there came PRPP, is obviously bound to decrease in IUI in 1,8 times and decrease of frequency of occurrence of FPI in 1,9 times. Possibly, in connection with improvement of function of a placenta against treatment almost in 2 times hypertensive violations decreased during pregnancy.

The carried-out researches showed, as at women with ABO the conflict after traditional therapy observed distinct dynamics of decrease in all studied indexes of a proteolysis.

So, in blood serum of mother with ABO the conflict after traditional treatment the maintenance of TZP in comparison with monitoring was lowered – for 19,9 %, TRP – for 11,3 %, MAM254 and MAM280 – for 16,0 and 10,4 % and the content of cytochrome C – for 11,8 %.

When studying processes of a proteolysis and cytochrome C in an umbilical blood of newborns, level of TZP, TRP decreased in comparison with data before treatment – for 15,6 and 12,9 %, MAM254 and MAM280 – for 13,0 and 9,9 %, the content of cytochrome C decreased – for 12,1 %.

The maintenance of TZP was lowered, in an umbilical blood of newborns from women with ABO the conflict in comparison with an outcome – for 14,2 %, TRP – for 10,9 %, MAM254 and MAM280 - for 15,3 % and 11,1 %.

It should be noted that traditional therapy not completely restored to control values of studied indexes of a proteolysis and the content of cytochrome C in the studied exemplars received from mother with ABO by the conflict.

From above presented data follows that changes of level of indexes of a proteolysis and membranolizis at pregnant women with ABO the conflict predetermine FPI and not wearing out development, being expressed a hypoxia and an oligotrophy of fetuss in the following durations of gestation that allows to offer use of indexes of a proteolysis and membranolizis as klinical criteria of an assessment of a condition of a fetusplacenta complex and not wearing out prediction.

Considering the complicated current of the period of a gestatsium, childbirth and the puerperal period, and also a fixed percent of a sensitization both the related perinatal incidence and the mortality, being accompanied the considerable changes of biochemical indexes at women with ABO the conflict, carrying out courses of treatment-and-prophylactic actions with

inclusion of the preparation possessing anti-hypoxemic and angioprotektorny properties cocarnitum was presented to us expedient and necessary. Cocarnitum appointed against traditional therapy according to the following scheme: since 16 weeks of a gestatsiya – on 2,0 ml daily intramuscularly 10 days three times during supervision.

Cocarnitum contains an adenosine triphosphate (10 mg), a cocarboxylase (50 mg), cyancobalamin (500 mkg) and Nicotinamidum (20 mg) that allows to have positive effect on the broken metabolic processes in organism fabrics.

The cocarboxylase is Thiaminum coenzyme, cooperating with a protein and magnesium ions, is a part some enzyme of the carboxylase catalyzing a carboxylation and decarboxylation α -кетокислот.

Cyancobalamine possesses high biological activity and participates in carbohydrate, proteinaceous, lipide exchanges. In an organism cyancobalamine turns into a cofactor-kobamid participating in synthesis of many enzymes. Cyancobalamine prevents accumulation of nedookislenny fatty acids in a matrix of mitochondrions, providing decrease of a specific gravity of processes β -окисления fatty acids in the conditions of an ischemia.

Nicotinamidum, as well as niacin, falls into to prosthetic components (coenzymes) of enzyme of a codehydrase of I and a codehydrase of II, being with hydrogen carriers and participating in oxidation-reduction processes.

Disodium adenoziinfosfatum trihydrate (ATF) falls into to the substances reminding on biological action vitamins and enzymes. As cocarnitum is buffer system, ATF by a principle of a feed-back interferes with premature oxidation of enzymes of a preparation and by that provides stability of medicine.

The combination in one preparation of the well-known pharmaceuticals which application totals decades, is caused by influence of components Cocarnit on metabolic processes.

Under the conditions limiting normal functions of a power metabolism (a hypoxia, a lack of a substratum and at the raised power consumption (an adhesion, regeneration) Cocarnit stimulates power processes of the function metabolism and an anabolism. The secondary effect is blood supply strengthening. Application Cocarnit significantly improves indicators of an arterial and venous blood-groove in system a mother-placenta-fetus that allows to reduce frequency of an early delivery at a placentary failure and adverse perinatal outcomes. Therapy with cocarnit renders the expressed therapeutic effect on a condition of the fetus developing in the conditions of a placentary failure, that is expressed by authentic improvement of a blood-groove in fetus and placentary vessels and endometrial body height of a blood-groove in

dynamics. Besides, treatment with Cocarnit promotes the best acceptability a childbed fetus (Trisvetova E. L., 2008).

The abortion threat, the characteristic complication for conflict ABO, after the carried-out complex therapy was noted for 37 % less often. Threat symptoms in early terms of a gestatsiya, rather than in late (12,9 % and 3,2 % respectively) were more often. Positive efficient therapy with inclusion cocarnitum was available on a spontaneous abortion so pregnancy interrupted for 12,3 % less often at pregnant women of this group. FPI is diagnosed in the 3rd group for 30,9 % less, than in the 2nd group of pregnant women.

Application of complex therapy with inclusion cocarnitum at pregnant women with ABO the conflict had expressed positive dynamics during and an outcome of childbirth: in 2,7 times frequency of early toxicoses, in 3,3 times – abortion threats, in 2,0 times – development of hypertensive violations in comparison with the 2nd group decreased. In this group didn't observe late abortions, premature births, weakness of patrimonial activity, complications of the puerperal period, it was noted decrease in frequency of premature ruptures of a bag of waters in 3,0 times, manual inspection of a cavity of the uterus in 1,5 times in comparison with the 2nd group.

Effectiveness of the spent treatment-and-prophylactic actions during pregnancy judged by results of BFPF it to a total assessment, conditions of children at the birth, to a current of their early neonatal period.

Inclusion cocarnituma in complex therapy of pregnant women with ABO the conflict of 3 groups, showed significant improvement of BFPF.

Fetometric indexes at 87,1 % of fetus corresponded to norm that in 2,3 times was higher, than in group before treatment. KTG testifying to a hypoxia of a fetus, was observed in 12,9 % that in 5,2 times it is less than in group before treatment. The index of a satisfactory motor performance was marked out in 71,0 %, what even exceeds indicators of monitoring in 1,2 times, and an indicator of group before treatment in 2 times.

The normal structure of a placenta was noted at 51,6 % of women of 3 groups after treatment that also exceeded indicators of group before treatment in 1,3 times. The normal amount of amniotic waters was noted in 77,4 % of cases that exceeded indicators of group before treatment for 35,5 % of cases.

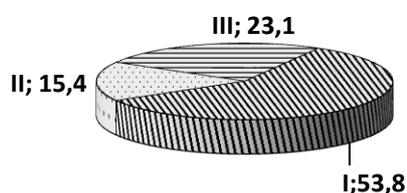
From dopplerometric data it is revealed that after the carried-out course of complex treatment with Cocarnit violation of UPFBC decreased for 32,3 %, from them violation of UPFBC I of degree decreased in 1,4 times, the II degrees in 4,5 times compared with group to treatment. Had no UPFB violations in the 3rd group after treatment for 32,3 % more often than in group before treatment.

Inclusion cocarnitum allowed to prevent and carry out treatment of the arisen hypoxia of a fetus to complex therapy of a preparation, to improve a condition of a fetusplacenta complex at pregnant women with ABO the conflict that was shown by assessment increase on a scale Apgar, absence of heavy hypoxemic defeats of a fetus.

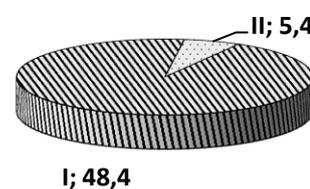
The average assessment on a scale Apgar made 9,0 points.

At an assessment of a condition of newborns on a scale Apgar it is established that in this group the index of a GPA in 1,2 times is higher, than in the 2nd group, frequency of an asphyxia of newborns decreased in 2,8 times, an endometrial becoming infected of a fetus in 2,6 times.

Traditional therapy



Traditional therapy + cocarnitum



I—mild

II – moderately severe

III - heavy

Fig. 1. Severity of HDN depending on the carried-out treatment.

So, number of children with a mild current of HD (fig. 1) travelled from women, receiving cocarnitum in complex treatment, in comparison with the 2nd group decreased in 1,1 times whereas with a moderately severe current this index decreased in 6 times, and a heavy form of a disease it was not observed at all.

In the 3rd group (tab. 1) were born 15 (48,4 %) healthy and 16 (51,6 %) sick children with HDN, from them with an icteric form of a disease were born 11 (35,5 %) children, it honor in 2 times less than in the 2nd group, the anemic form of a disease met in smooth quantity, and with an edematous form of a disease the birth of children in the 3rd group wasn't observed.

Table 1.

Some indexes of the early neonatal period

Index	1 group, (n=22)		2 group, (n=26)		3 group, (n=31)	
	abs	%M±m	abs	%M±m	abs	%M±m
Healthy newborns	-	-	2	7,7	5	48,4
HDN	22	100	4	92,3	6	51,6
anemic,	15	68,2	8	69,3	1	35,5

edematous,	5	22,7	5	19,2	5	16,1
icteric	2	9,1	1	3,8	-	-
heavy	11	50,0	4	53,8	5	48,4
moderately severe	6	27,3	5	19,2	1	3,2
mild	5	22,7	5	19,2	0	0
Conservative treatment	11	50,0	6	61,5	5	48,4
Operation the replace hemotransfusion (ORH):	11	50,0	6	23,1	1	3,2
Single-pass	1	4,5	4	15,4	1	3,2
Twofold	3	13,6	1	3,8	-	-
Triple	4	18,2	1	3,8	-	-
Quadruple	3	13,6	-	-	-	-
The annex to a breast (days)	3,9		2,2		1,1	
Written out from a maternity home (days)	8,5		7,4		5,4	
Transfer to the 2nd stage of nursing	4	14,8	1	3,1	-	-

Conservative treatment of HDN is carried out in 15 (48,4 %) cases, and ORH is single-pass in 1 (3,2 %) a case.

In group of the women receiving in a complex of traditional treatment cocarnitum a lethality of newborns from a hemolytic diseases it was not observed, but from other reasons among which a fetal becoming infected dominates, were 2 (6,1 %) a case of a spontaneous abortion.

Thus, results of the carried-out researches shows that in group of pregnant women receiving in complex therapy cocarnitum, decrease was observed frequencies of an asphyxia of newborn, in particular, heavy forms, the HD heavy form more often causing a postnatal mortality didn't develop.

At research of biochemical indexes of an umbilical blood at newborns from the pregnant women receiving in complex therapy cocarnitum, decrease in the maintenance of the common bilirubin and its fractions in group of newborns with mild degree in 1,0 times and with average weight of HD in 1,9 times is established. The HD heavy forms it was not noted that testifies to increase of pairing ability of a liver of the newborns which mothers received cocarnitum.

The nuclear heating plant and ALT in an umbilical blood of newborns decreases only at the HD mild form in 1,4 and 1,1 times respectively.

Thus, at newborns of studied group improvement of pairing and functional capacity of a liver, even was noted at the HD moderately severe form that scientifically proves possibility and need of application cocarnitum during pregnancy at ABO the conflict.

After a complex of treatment-and-prophylactic actions with Cocarnity the titre of immune antibodies was observed in a variation from 1:2-1:4 to 1:32-1:64, from them within 1:2-1:4 – at 51,5 %, 1:8-1:16 – at 27,3 %, 1:32-1:64 – at 15,1 %, and antibodies in a titre 1:128 in blood of pregnant women weren't observed, and natural antibodies decreased in 2 times whereas before antibody treatment in a titre 1:128 were 6,1 % and natural antibodies – 12,1 %.

The greatest percent of the birth of children with this pathology was noted at a titre 1:2-1:4 – 10 (30,05 %) with mild degree of HDN. However in process of antiserum capacity increase the risk of the birth of children with an ABO-gemoliticity diseases increases: at a titre 1:8-1:16 at 7 women (21,2 %) was born 3 (9,1 %) patients – 2 (6,1 %) with mild degree and 1 (3,0) with moderately severe degree of HDN, 3 (9,1 %) healthy children and 1 (3,0 %) a spontaneous abortion. At a titre 1:32-1:64 of 4 (12,1 %) women – at 1 (3,0 %) the child was born with mild degree of HDN, at 2 (6,1 %) healthy children and at 1 (3,0 %) a spontaneous abortion. At a titre 1:128 were born 2 (6,1 %) children with mild degree of HDN. After treatment the titre of natural antibodies is found in women of 3 groups at 2 (6,1 %) travailled healthy children.

Thus, inclusion in a complex of antenatal desensitizing therapy of pregnant women, with ABO the conflict, Cocarnit leads an anti-hypoxemic to improvement of a condition of a fetoplacental complex being shown the positive dynamics of BFPP and doplerometric parameters. These changes prove to be true decrease of frequency of an asphyxia of newborns, HDN identifications, lack of heavy forms.

The analysis of the received results of researches showed that the maintenance of TZP in blood serum of mother in comparison with data of traditional treatment after three-course purpose of a preparation cocarnitum decreased for 13,8 % ($R < 0,05$), Chamber of Commerce and Industry – for 3,4 %, MAM_{254} and MAM_{280} – for 17,2 and 7,3 %, cytochrome C – for 8,9 %.

Positive metabolic changes in an organism of mother and fetus after appointment in a complex of medical actions of a preparation cocarnitum are reflected in decrease processes in urine of toxic products of a proteolysis and decrease in cytochrome C.

In urine of mothers with ABO the conflict after purpose of a preparation cocarnitum level of TZP was lowered after comparison with group of women which treated a traditional method – for 2,9 %, Chamber of Commerce and Industry – for 3,4 %, MAM_{254} – for 18,9 %, MAM_{280} – for 4,5 %.

Cocarnitum positively influenced decrease in processes of a proteolysis and membranolysis in an organism of newborns from mothers with ABO the conflict. In comparison

with traditional treatment level in serum of an umbilical blood of newborns from mothers with ABO the conflict was lower when studying the maintenance of TZP – for 17,2 %, Chamber of Commerce and Industry – for 12,5 %, MAM₂₅₄ - for 19,0 %, MAM₂₈₀ – for 2,3 %, concentration of cytochrome C – for 15,8 %.

It should be noted that from total number of newborns treated a traditional method for 6-10 days ($8,5 \pm 0,76$) indexes of a proteolysis and the content of cytochrome C in an umbilical blood came nearer to monitoring level – 4,7 (21,9 %), and in groups of mothers which in a course of traditional treatment appointed cocarnitum this indicator was essentially above – at 15 (45,5 %), i.e. effectiveness according to results of positive action cocarnitum, raised for 34,9 %.

Cocarnitum at inclusion it in plan of treatment to pregnant women with ABO the conflict the effect of traditional therapy raises the EI directed on decrease on a way mother fetus.

Generalizing everything higher told the carried-out researches at ABO of immunization revealed the leading role of EI in system a mother-placenta-fetus, as possible pathogenetic mechanism of development of immunization and HDN. Inclusion antenatal in desensitizing therapy, three times for pregnancy, cocarnituma gives a potent anti-hypoxemic at decrease of frequency of complications of pregnancy, improvement of an outcome of childbirth, conditions of newborns, to decrease in frequency of the HDN heavy forms and excludes perinatal losses.

Practical recommendations

1. Antenatal diagnostics of HD provides application of noninvasive methods: definition of group accessory of mother and the father, skringing definition of antibodies and their titre each 2-4 weeks till 30th week of the pregnancy, each 1-2 weeks after 30 weeks, ultrasonic investigation, a doplerografiya with definition of violation of UPFBC each 1-3 weeks according to indications. With ABO the conflict it is necessary to allocate pregnant women in group of risk for perinatal incidence and mortality.
2. For to clinic prediction of a placentary failure at pregnant women with AVO the conflict it is necessary to include in skringing inspection definition of the maintenance of molecules of average weight, in blood serum, in daily practice of primary link and maternity hospitals, since first weeks of pregnancy in dynamics.
3. With AVO the conflict expediently carrying out courses of treatment-and-prophylactic actions with inclusion of the preparation possessing anti-hypoxemic and angioprotektor properties cocarnit also is necessary for pregnant women. cocarnit appoint against traditional therapy on following skheme:-on 2,0 ml daily, intramuscularly for 10 days, three times during pregnancy.

Treatment carry out courses to terms: 16-18; 24-26; 36-37 weeks. The preparation cocarnit is recommended to be applied from 16 weeks of a gestatsiya.

4. Doklinichesky prediction of a placentary failure at pregnant women with AVO the conflict, opredelenimy level of endogenous intoxication and inclusion in a therapy complex cocarnit three times for pregnancy reduces percent of development of a hemolytic illness of newborns with a srednetyazhely form and excludes development of heavy forms of a disease. The combination of a deallergization, selectivity, lack of aggression of a technique and social availability is the alternate and efficient method of prophylaxis and treatment of a hemolytic illness of a fruit and the newborn at AVO the conflict.

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List of reductions

HDP – a hemolytic diseases of a fetus
HDN to - a hemolytic diseases of the newborn
HD - a hemolytic diseases
OP – oligopeptides
VNSMM - substances with a low and average molecular mass
EI – endogenous intoxication
TZP – tyrosine containing peptides
TRP – tryptophan containing peptides
USI – ultrasonic investigation
KTG - cardiotachogram
HIP – hypertension induced by pregnancy
FPI – a fetoplacental failure
IUI – an endometrial infection
ROPM – manual inspection of a cavity of the uterus
PRPP – a premature rupture of a bag of waters
BFPF – biophysical a fetus profile
UPFBC – parent плацентрано - fetus blood circulation
ORH – operation the replace hemotransfusion