

Childbirth: the genetic-psychosomatic mother-child tango To the new theory of parturition¹

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"The Nature knows best"
Postulate

Summary. Based on the system analysis of the results of modern scientific research, the authors describe the Natural System of regulation of the parturition, which is genetically determined phenomenon. The System is organized before childbirth, accompanies the birth process and is rebuilt in the early postpartum period. The described multi-component System is formed jointly by mother and child, provides them with protection from stress and pain, creates conditions for their mutual identical experiences and subsequent love relationships. In the absence of interferences (social, psychosomatic, ecological, medical), the child, accompanied by the mother, is born independently, without fear, pain and trauma.

Key words: *childbirth, system of the parturition organization, gene regulation, prevention of disorders*

Introduction. The concepts of childbirth and pain as a unity are firmly rooted in the minds of the population and some specialists. However, until now it is not clear what pains in childbirth may be associated with? The well-known Williams Obstetrics Manual (2015) in perplexity: "Unique to physiological muscle contractions, uterine smooth muscle contractions are painful during labor. *The cause of the pain is definitely not known*" and further the hypotheses are given that try to explain this phenomenon: hypoxia of the contracted myometrium, etc. (p. 154).

But if the pain syndrome is puzzling, then there are no questions about the organization of parturition. It seems that this is a well-studied and known process. Meanwhile, anomalies in labor activity are a frequent complication (up to 15-20%), and its discoordination was noted in 70-80% of nulliparous pregnant women (Sidorova 2000). In recent years, there has even been a tendency for this pathology to increase, moreover, among residents of megacities (Shields 2007), which has not been explained. This pathology is often the cause of birth trauma and the need for emergency surgical delivery.

Some obstetricians (not having sufficient knowledge of the organization of the labor and the factors that interfere with its development) began to argue that women do not understand when labor begins, do not consciously regulate it, and headed for active labor management (O'Driscoll et al 1969). They developed a package of actions for obstetricians, including early amniotomy with intravenous administration of oxytocin, antispasmodics, and other measures. It took near 50 years of clinical observations and studies before WHO experts opposed the use of this package.²

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²WHO RECOMMENDATIONS: Intrapartum care for a positive childbirth experience(Geneva 2018)

The lack of theoretical knowledge about the organization of the birth process and the causes of its violations does not allow creating reliable methods for preparing women for childbirth, accompanying them during childbirth, and preventing possible disorders.

Unfortunately, scientific research conducted in this direction has not yet received a proper assessment from the position of contribution to the theory of childbearing.

Purpose of the study: To conduct a system analysis of modern scientific data on the regulation of the parturition to create a concept that could be used in the medical and psychological support of women during pregnancy and childbirth and would allow women to give birth to their children on their own, without pain and trauma, and with positive emotions.

The materials and methods

We analyzed scientific data from available monographs and articles published mainly during the last decades in peer-reviewed journals in English and Russian. The criterion for selecting articles was their citation. We also studied the Williams Obstetrics Manual, the National Manual of Obstetrics (Ailamazyan et al. 2007) and oth. In order to preserve the connection of times and pay tribute to our predecessors, the data that retain their scientific value and are published in the Multivolume Guide to Obstetrics and Gynecology (Ed. Persianinov et al. 1963) have taken into account. We are only now beginning to understand the significance of the data obtained at that time in the light of modern scientific research.

That is, we were considered the published scientific data from the position of their possible participation in the regulation of the parturition.

The results of research

The gene regulation. A system analysis of scientific data has shown that the human birth (conception, pregnancy, childbirth and postpartum adaptation) is a genetically determined process. It is organized with the close interaction of **the gene systems of the child and his mother**, with high activity and coordinated expression of many genes in both.

A large-scale study involving 74 researchers from 9 countries identified for the first time a genetic locus in the fetal genome, located on chromosome 2 (2q13), associated with the duration of pregnancy. Here there is a group of genes of the so-called interleukin-1 (IL-1) family, which regulate the production of cytokines that determine pro-inflammatory reactions. In the days preceding childbirth, they play a leading role in the maturation of the cervix, the initiation of uterine contractions, detachment and rupture of the membranes. The authors believe that it is the child determines the date of his birth, since these genetic variations were more often found in the fetal genome and coincided with the time of birth (Liu X., Helenius D. ... Feenstra B. 2019).

Previous studies have found that during the last weeks of pregnancy there is a *dramatic increase in the size of the baby's adrenal glands*. This is accompanied by increased secretion of steroid hormones - up to 100-200 mg / day (in adults at rest - 30-40 mg / day) (Murphy 1982, Williams Obstetrics 2015). At the same time, a **"strikingly sharp increase"** in the level of biologically active **protein-bound corticotropin-releasing hormone (CT-RG)** in the amniotic fluid was found (Perkins e.a. 1995; Petraglia e.a. 1997). According to the researchers, this is the result of the endocrine function of the placenta, and not hyper function of the hypothalamic-pituitary region of the child, since the increase in the level of ACTH in the child's blood plasma **is not**

detected. His adrenal glands undergo rapid involution after birth, with the cessation of the supply of placental factors (Williams Obstetrics, 2015 , pp.170-171).

In our opinion, changes in the structure and function of the adrenal glands, as well as other organs and systems (respiration, circulation, etc.) are associated with the function of the **Genetic Program** for the development and maturation of the child. The same Program regulates the **preparation for the birth and the unique process of birthing**, and after it - the rapid and successful adaptation of the child to the new living conditions.

In women at various stages of the parturition the expression of certain genes was also identified in: tissues of myometrium (Aguan et al. 2000, Bethin et al. 2003, Girotti et al. 2003), estrogen and progesterone receptors (Winkler et al. 2002), intercellular adhesion molecules-1 (Ledingham et al. 2001), interleukin-8 (Osmers et al. 1995), 15-hydroxyprostaglandin dehydrogenase (Giannoulis et al. 2002), prostaglandin endoperoxide synthase 1 and 2 (PTGS1 and PTGS2) (Sparey et al. 1999), protein of myometrial gap channel - connexin-43 (Chow et al. 1994), as well as the S100A9 protein, the content of which sharply increased in neutrophils and endotheliocytes of the vessels of the myometrium and cervix. It ensuring the maturation and opening of cervix (Havelock et al. 2005).

Taking into account the provisions of wave genetics (Gurwitsch 1922, 1944; Kandzhen 1993; Garyaev 1994, 1997), it is logical to assume the existence of a wave interaction between the gene systems of the child and the mother. The manifestations of such an interaction are the duration of pregnancy (38-40 weeks), and on the eve of childbirth - a **stable starting position of the child** (longitudinal position, head presentation), a **decrease in his motor activity**, and with the onset of childbirth – active advancement along the birth canal, called **the biomechanics' of childbirth**, which is typical only at the human birth.

The denervation / desympathization of uterus

It is known that pregnancy is accompanied by growth in the uterus of nerve fibers, bundles, endings, receptor zones. (Naiditsch 1929; Lawrentjew, Naiditsch 1933; Jordania 1961). However, histological studies unexpectedly found that 2-3 weeks before birth, the number of nerve elements in the tissues of the uterus decreases sharply, that is, the uterine denervation occurs (Baksheev et al. 1968).

Subsequent studies have made a clarification – the **desympathization of uterus**. Moreover, in women giving birth, “adrenergic fibers around the vessels and in the thickness of the myometrium in any of the sections of the uterus could not be found” (Chaliapina et al. 1988, p. 50). From these positions, the data obtained during experimental studies on a sharp drop in the content of norepinephrine (NE) in the uterus, especially in the sympathetic neurons innervating the uterus, by the time of delivery, became clear (Zuspan et al. 1981; Arzhanova et al. 1985, Rakitskaya et al. 1990). Neurons, that were still found in the uterus, lost the ability to absorb labeled NA - by 60%, while a decrease in tyrosine hydroxylase activity was observed - by 90% (Thorbert 1978; Shaliapina et al. 1988). This enzyme is encoded by the TH gene and exhibits its activity only towards the end of childbirth (Nagatsu 1995).

One can treat with understanding the “intention” of Nature: by the desympathization of the uterus it protects the woman in labor from an excessive flow of pain impulses, and on the other hand, it seems, that this is desire to transfer the process of childbirth for the automatic regulation.

Automatism of Smooth Muscle Cells(SMC) of myometrium

Automatism of uterine SMC was found even in the non-pregnant uterus (Hendricks 1966, Bengtsson 1969, Savitsky 1999). It manifests itself in the form of many zones of excitation in various parts of the uterus with the onset of labor (Manabe et al. 1994). Gradually, they begin to obey a single rhythm emanating from one center - the pacemaker, which is usually located in the right corner of the uterus (Garfield et al. 2005).

But if the destruction of sympathetic nerve fibers and nerve endings occurs on the eve and during childbirth, then questions arise: what unites the SMC and organizes the rhythmic contractile activity of the uterus?

The Acupuncture System (APS)

The scientists was found during pregnancy in the myometrium the pronounced expression of genes encoding **tight junction** proteins - **claudin-1 and 2**, as well as the **protein of intercellular gap junctions (IGJ) - connexin 43** (Griep et.al. 1980; Pitts et.al. 1980; Severs et.al. 1993; Chow 1994). To the ending of full-term pregnancy, the number of **IGJs** between SMCs increases, and during childbirth their number and the content of **Connexin 43 - sharply increases** (!), but ... **24 hours after birth**, researchers **cannot be detected it** (Garfield 1988; Ulstrom 1992).

As it is known, three types of contacts there are between adjacent cells: tight (connecting), desmosomal (exchange) and gap. An increase in the concentration of **tight junction proteins** between SMCs is logical: it is necessary to strengthen the bonds between SMCs, the load on which increases sharply with the onset of labor activity.

Mashansky et al (1982, 1992) visualized **IGJs** using electron microscopy and contrasting and found a large number of them in places of biologically active points (BAP) compared to adjacent tissues. According to the authors, the **IGJs** form the **intercellular gap channels (IG-channels)** - known as the **Chinese classical meridians**. They participate in the creation of an intercellular network, through which the distribution of auto-wave or induced (by needles, laser) energy information takes place. **IG-channels** are system-forming elements that provide a qualitative transition from the cellular level of organization to the tissue level (Arkhipenko et al. 1975; Malenkov et al. 1982). In fact, **IG-channels** are the basis of **the acupuncture system (APS)**.

Naturally, the question immediately arises: what kind of wave information is it that moves along the **APS**?

Taking into account the provisions of quantum mechanics, theory of corpuscular-wave dualism, wave genetics and the wave principle of information propagation - everywhere and in zero time - allows us to understand how all **200 billion SMCs** localized in the different sections and layers of the myometrium, united by identical amplitude-frequency wave diapason, **simultaneously** receive the information about changing hormonal situation and at the **same time** organize the functioning of the uterus with all its components, including the fetus complex. In the case under discussion: **IG-channels** provide *functional synchronization of the SMCs of the myometrium* (Chow, Lye 1994; Saez et al. 2005).

Here it is appropriate to note that, like this mechanism (and simultaneously with it), the wave flows ensure the functioning of the woman and her prenat, their instantaneous mutual information connection, which is important in the process of pregnancy and childbirth. These mechanisms underlie the mother's control over the development of the structures and functions of the prenatal child's organs, his perception of the mother's thoughts and behavior, and the formation of his attitude to the objects and people of the world around them. They allow us to understand how and

why the obstetric situation, due to the behavioral reaction of the child to the emotional outbursts of the mother, can change dramatically and complicate the childbirth (breech presentation, prenaté's transverse position), and can also be reflected after birth on his relationships with loved ones, on his behavior in society.

These ideas formed the basis of **The conception of multilevel wave information exchange between mother and unborn child**, developed by us and first published and voiced at the International Congress of ISPPM (London 1998) and (in development) at subsequent forums(2000-2016)³.

Consequently, the APS functions in the human body along with the nervous system(NS), and is in constant reciprocal communication with it. Pregnancy and childbirth are an example of **a unique situation** in a person's life, when one regulatory system (**nervous**) delegates to another (**acupuncture**) - the performance of a very important, responsible function - the birth of a person, and after this event, within **24 hours**, the APS "gentlemanly" returns to the NS its field of activity - the uterus.

The remote neuro-endocrine regulation of labor

From the described one could get the impression that the NS is generally removed from the management of parturition. **The Nature is wise**: realizing the desympathizing of the uterus, removing elements associated with pain sensitivity, and creating optimal conditions for birth, it retained for the nervous and endocrine systems their **remote regulatory functions** by the **neurotransmitters and hormones**, and for genes – also the ensuring their perception in the form of protein coding receptors for them on the membranes of SMCs and other cells.

The contractile-inhibitory system. It is known that childbirth is associated with the contractile activity of the myometrium, which is controlled by uterotonic biologically active substances(**BAS**). Among them: oxytocin, prostaglandins, acetylcholine, serotonin, adrenaline, nor-epinephrine, histamine, endothelins, angiotensin-II, kinin system (Ailamazyan et al. 2005, p. 134). They are supplied by the nervous and endocrine organs of a woman, circulating blood cells, and the structures of the fetal egg. At the same time, the number of receptors for the BAS on the membranes of the SMC of the myometrium increases.

Along with the sub-system that provides uterine contraction, during pregnancy, the inhibitory sub-system BAS constantly functions: relaxin, atrial and brain natriuretic peptides, prostanoids, protein-bound parathyroid hormone, corticotropin releasing hormone (CT-RG, cortico-liberin). This sub-system provides relaxation of the myometrium, due to which the uterus has the opportunity to maintain inertness and extensibility during pregnancy, and create conditions for the growth of the fetal egg, and in it the prenatal child. All elements of this system are preserved by the time of delivery and continue to function, providing a **mild regulation** of the contractile activity of the SMC of the myometrium.

Another way to preserve the balance of BAS of the contractile-inhibitory system is **the accelerated destruction** of tono-motor substances using a system of specific enzymes: oxytocinase, prostaglandin synthase, enkephalinase, diamine oxidase, atechol-O-methyltransferase, angiotensinase, respectively (Schimke1969; Bates e.a. 1979; Casey e.a. 1980; Alberts e. a. 1987; Yasuda a. Johnston, 1992; Germain e. a. 1994; Crankshaw a. Dya, 1994). This phenomenon provides not only the rhythm of

³The same ideas formed the basis for the development of a *method for the verbal-musical restoration of normal labor activity* in case of its deviation due to acute emotional stress of the mother (Brekman 1998), as well as a *method for non-contact recovery of the head presentation* of the prenaté when it passes into the breech presentation of the same genesis (Brekman 2021),

contractions, but also the protection of the mother and child from excessive uterine contractions.

That is, during pregnancy and childbirth, the function of the myometrium is under the control of the **contractile-inhibitory system**. It is surprising a large number of tonomotor and inhibitory BAS, as well as two ways of their functioning. This could be considered as a manifestation of the **phenomenon of duplicate systems** that ensure the unconditional fulfillment of the main task.

It can be assumed that **the wave component of the molecules of these substances** is the content of the *acupuncture system of the uterus*.

But how are these BAS delivered to the uterus?

Vascular pool and blood circulation in the uterus

The wall of the uterus consists of three membranes: mucous - endometrium; muscular - myometrium; serous - perimetry. The myometrium includes of three layers: internal – sub-mucosal, middle - vascular and external – supra-vascular. The most developed is *the vascular layer*, which contains a large number of vessels, mainly venous ones. During a contraction, blood continues to flow through the arteries into the uterus, while venous outflow is difficult due to compression of the veins. At the height of the contraction, blood circulation in the myometrium stops for a short time. By this time, the uterus, as it were, rears up and may increase slightly in volume. This is reminiscent of the phenomenon of the "cavernous body" (Savitsky 1999). At the same time, many veins collapse, but dilated venous sinuses remain in most of the uterine wall (Williams Obstetrics 2015 p.26). It is possible that the blood filling them contains inhibitors that help to relax the uterus after a contraction.

And what is the psychological state of the woman and her child against the background of the described transformations on the eve and during childbirth?

Psychological state of a woman and her child during childbirth

The first scientific studies using electroencephalography found in pregnant women on the eve of childbirth a decrease in the excitability of the cerebral cortex and an increase in the activity of the sub-cortical region (Lazarev 1963; Petrov-Maslakov 1963).

One of the manifestations of this is a change in the psychological state of the woman, which is described as the "nesting syndrome": women focus their attention on the preparation of the place of birth and the subsequent comfort for the born child (Borovikova 1998).

With the onset of childbirth and as they develop, **a state of altered consciousness** is formed in women. Studies by psychiatrists (Spivak LI, Spivak DL et al., 1993, 1996, 1998) showed that 78% of the women studied during childbirth and in the postpartum period experienced sudden phenomena of **unusual states of consciousness**: a subjective feeling of deep "joy-happiness", mental contact with the child. For some, pictures of the life lived, mental contact with relatives were recorded before the "inner eye". In 10% of women in labor, the phenomenon of "going out of body" was observed. Women for some time watched themselves and what was happening as if from the outside. Those of the women who experienced this "trance" state unanimously stated that it was accompanied by the complete disappearance of pain for the period of this exit.

This state of trance in the 2nd period of labor M.Odent (2006) was figuratively described: "She flies to another planet."

The described **states of the altered consciousness** of women are most likely related to:

a) the **structural changes in the brain**. Recent studies have found that pregnancy is accompanied by a decrease in gray matter volume in areas of the brain associated with social knowledge. It turned out that these changes in gray matter predicted the degree of maternal attachment after childbirth, indicating an adaptive process that ensures the transition to motherhood already during pregnancy (Hoekzema et al. 2017).

b) the substances of contractile-inhibitory system along with a specific effect on the SMC of the myometrium, have **the psychotropic properties**.

The similar properties also have morphine-like opiates (endorphins, enkephalin) produced by brain neurons. Their production progressively increases with the onset of labor and peaks at the time the baby passes through the vulvar ring (Csontos e.a.1979; Akil e.a.1979; Thomas e.a. 1982; Genazzini 1989; Lou 1989; Nandhra a. Carson 2000).

The **BAS** mentioned above constitute a kind of **neurotransmitter-hormonal cocktail**, which is also involved in the formation of a **state of altered consciousness** in women on the eve and during childbirth.

A similar condition is probably formed in prenat, provided with significant concentrations of **its own corticosteroid hormones**, which are known to have a narcotic effect, and also due to his wave connection with her mother.

The state of altered consciousness in mother and prenat is a necessary condition for removing obstacles in the way of their psychosomatic interaction during the birthing.

We must keep in mind that the transformations of the brain, the production of hormones, and the birth process itself do not happen by themselves. All this is the result of the **active functioning of the genes** located in the nuclei of every cell of the mother and child.

On the eve and during childbirth, there is a **deployment**, inherent in them initially - **the Genetic Program of Birth**.

Discussion and Conclusion

We briefly presented the results of **a systematic analysis** of numerous publications, which for the first time made it possible to formulate a scientifically based **the Theory of parturition**.

And we would like to convey our heartfelt gratitude to all those scientists who, through their research, have made a feasible contribution to the development of this theory, to all those whom we have quoted and not quoted - due to the need to comply with the regulations.

Though the data presented convincingly show that childbirth is a painless process, there is no doubt that some of the women who have given birth - will necessarily argue the opposite, since they experienced pain during childbirth and were given pain relief. And this requires an explanation.

We intend to do this together with the famous American neurophysiologist, neuropsychologist, biochemist Joe Dispenza⁴. According to him we as a rule perceive reality not as it is, but interpret it on the basis of ready-made images.

Let's clarify: These images are stored in our genes in the form of information that came from our ancestors and additionally accumulated by us in the process of our life, starting from conception. This genetic information about the experience contains both positive and negative impressions. The socio-psychological environment around us is constantly changing, provoking the appearance of certain emotions and thoughts, and even being alone, we are under the influence of our thoughts.

⁴Dispenza J. Develop Your Brain: The Science of Changing the Mind. Health Communications,Inc.,2007

According to Dispenza: "The thought is prior to matter. If we pay attention to negative thoughts, our brain perceives them as reality and causes corresponding changes in the body, for example, in the form of illness, fear, depression, an outburst of aggression, etc".

Let's clarify: if a woman thinks all the time that childbirth is painful, then these her thoughts are perceived as reality, and during childbirth she perceives everything that happens from the position of pain. The same applies to professionals who empathize and provide assistance.

But with the advent of the Theory of Childbirth, they have a great opportunity to consciously change their thinking.

From the point of view of Dispenza's statements: If you take with confidence the information received about the organization of childbirth, you will have new thoughts, and new thoughts lead to new choices - new choices lead to new behaviors - new behaviors lead to new experiences - new experiences lead to new emotions that, together with new thoughts, begin to supplement the content of your genes and become fixed in them thanks to epigenetic mechanisms. In this way, you build self-esteem, develop self-confidence, and have the opportunity to pass this information on to your unborn child.

The above presented data indicate that practically all organs and systems of a woman's body (endocrine, circulatory, sexual, etc.) are involved in the organization of childbirth, controlled by regulatory subsystems - nervous and acupuncture, which are in constant reciprocal communication.

The combination of this multi-component structural and functional ensemble is carried out by **the gene system**, represented by the genome in each cell of the body of both individuals. At the same time, a clear sequence and time intervals of the events taking place testify to the presence of **the Reproduction Program** initially embedded in the genomes of the mother and child. The coherence of its functioning indicates the wave method of "communication" between mother and child, in accordance with the provisions of quantum mechanics and wave genetics. All this confirms the opinion existing among the professionals that from the moment of conception, during pregnancy and childbirth, the mother, child and elements of the fetal egg (placenta, membranes) constitute a *harmonious functional unity*.

That is, the birth process is organized and controlled by the high activity of two gene systems, coordinated by the expression of many genes of both the child and the mother. These systems are ideally designed to perform the following leading tasks:

a) Create optimal conditions for the development of the fetal egg and the child in it, as well as preserve the psychosomatic state of the mother, adding to her positive feelings of dignity, pride, confidence and joyful expectation.

b) At the stage of maturity and readiness of the child for extrauterine functioning - 2-3 weeks before birth – to start the transformations in each of them and to form a multi-component of the Parturition System.

c) Ensure the unconditional, problem-free birth of prenatals through the natural birth canal, making this process as no traumatic and painless as possible - for both.

d) Create conditions for the timely restructuring and adaptation of mother and child, starting from the moment of birth and beyond.

Childbirth, or rather - Birth - is a genetic and psychosomatic phenomenon, involving a woman-mother and a child, in which the honorary right of the initial impulse belongs to the child being born! From these positions, it seems logical to amend the existing ideas:

Birth is a unique event in the life of the family and society, taking place in a unique ecological and psycho-social environment, which has its own cultural, religious, ideological, economic features that characterize various aspects of civilization.

Civilization, for all its positive role, has largely destroyed what Nature has created for the entire reproductive process. One of the consequences of the negative impact of civilization is the fear of childbirth. Its prevalence in primigravidas was found in each trimester, and in 34.7% of them, even an increase in anxiety was noted as the birth approached. When planning delivery, they preferred caesarean section and pain management (Hendrix et al. 2022).

To this it should be added that it is fear that violates the psychosomatic status of women, which is accompanied by various complications of pregnancy and childbirth, and, no less important, is one of the leading causes of prenatal and perinatal psychosomatic trauma of the of the birthing generation.

Hence, at the present stage, the tasks of specialists are:

- a) the introducing into society the new theoretical knowledge about the birth process,
- b) the involvement to it the cultural and medical workers, public figures, the media, the Internet,
- c) the organization of Educational Schools for pregnant couples, for the psychological preparation of the pregnant women to labor on the basis of a new theory of childbirth,
- d) the creation of specific (intimate) conditions for delivery, accompanied by a trained midwife.

It is possible that future studies will bring additional facts about the regulation of the parturition, but even the presented data are enough for the understanding in which direction, we should develop the prevention of its possible disorders in order to contribute to the birth of a mentally and somatically healthy generation of people. This will be a wonderful realization of **the Birth Program**, written in **the genomes** of the child and his mother!!