THE BASIC CRITICAL POINTS OF FETAL HEALTH DETERMINED BY MATHEMATICAL MODELING OF ONTOGENESIS PERIODIZATION

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In our earlier study (Gogoberidze N.V., Papitashvili A.M. « School of Fundamental Medicine Journal», 1996, v.2, N 1, 92-93) using mathematical theory of information, we have defined based on the mathematical modeling the informative theory of ontogenesis periodization. There was get answer of equation concerning ontogenesis periodization. Based on this cardinal equation there was get later the definitive formula for determination the critical points of gestation. Using this formula we determined the basic 8 points in prenatal period, most critically for fetal health. All cases are (±) 1 day correct and the first day of fertilization is named as a 0 day. The critical days of fetal health are:

5th day	*69th day*	*210th day*
18th day	*107th day*	*274th day -*
39th day	*154th day*	*- time of birth*

Determined critical points can be useful in managment of pregnancy.

TNF-ALPHA AND IL-I SECRETION IN MACROPHAGE CULTURES OBTAINED FROM PLACENTAS IN VARIOUS PREGNANCY OUTCOMES

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Objective: *To investigate the role of inflammatory cytokines TNF-a, IL-I a and IL-I 13 in term and preterm parturition at different gestational ages.*
Methods: *Placentas were obtained from nonlaboring women with cesarean deliveries at 21-26 weeks gestation (early preterm), 31-34 weeks gestation (late preterm), and term or from laboring women with spontaneous early preterm, late preterm abortions and vaginal delivery at term. Cell cultures were prepared by dispase-collagenase digestion of placenta tissue and ficoll-urografin density centrifugation. In vitro cytokine secretion was determined with ELISA.*
Results: *In nonlaboring group secretion ofTNF-a and IL-Ib 13 increased significantly since early to late preterm (TNF-a from 9,8±l,8 pg/ug cell protein to 20,l±6,9 pg/ng; IL-1(3 from 10,0±l,4 pg/ug to 23,l±2,6 pg/ug). Increase of IL-a (30,5±6,l pg/ug vs 17,9±2,l pg/ug) and IL-1b 30,3 ±5,8 pg/ug) level was also observed in term compared with late preterm. TNF-a secretion did not change in term macrophages when compared with late term. Spontaneous laboring activity in early preterm led to 5-20-fold increase of cytokine secretion (TNF-a - 242,l±39,8 pg/u-g, IL-lb -86.4±7,0 pg/ug, IL-a - 204,6±12,3 pg/ug). In contrast, in term laboring women we observed no significant changes in TNF-a production (19,0±3,8 pg/u-g) and even decreased IL-Ia and IL-Ib secretion (13,3±4,4 pg/ug and 15,4±l,6 pg/ug correspondingly).*
Conclusion: *Early preterm labors (second trimester of pregnancy) are associated with elevated placental cytokine production.*