DYNAMICS OF THE STATE OF HEALTH OF PREGNANT WOMEN
AND NEWBORN BABIES FOLLOWING THE
CHERNOBYL NUCLEAR POWER PLANT ACCIDENT

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Introduction. From the first days after the Chernobyl catastrophe constant observation of health state
in pregnant women, who are permanently living within contaminated regions of Ukraine was carried
out. Pregnant were examined either in hospital or by ambulant teams. The examination consists of
radiometry of incorporated radionuclids in organism, radioimmunologic, endocrinologic, biochemical,
morphologic and paraclinical methods.
The analysis of pregnancy and delivery tendency, state of fetus and newborn takes place providing
registration of the same indexes in the period from 1983 till 1986 and in conditionally “clean” Poltava
regions. also it’s taken in consideration habitable zones with level of contamination by cesium, doses of
radiation and period of pregnancy.

Results. The results of investigations of more than 20 000 women show that low doses of ionizing
radiation have unfavourable influence to reproductive function of woman organism. We note the
decrease of birth rate, the increase of pregnancy and delivery complications, of perinatal mortality,
morbidity of pregnant and newborns.
It’s interesting to mention that the screening investigations of pregnant and their newborns during first
period after catastrophy hasn’t showed any alterations in their health state.
The examination of health state in dynamics of pregnant and newborns showed significant alterations in
functional systems and in neurohumoral mechanisms of their regulation in mother and fetus. There are
the alterations of cardiovascular system, central and peripheric hemodynamics, pulmorespiratory
apparatus, hormonal and immunologic status, system of hemostasis and processes of adaptation.
There are the disorders of psychoemotional state in 74,8 % of pregnant, which manifest by low level of
functional abilities of psychic adaption, sharp weakening of physical endurance.
These alterations have a great influence to the development of obstetric and perinatal complications, the
frequency of which exceed the average indexes all over the country. Significantly increased frequency
of EPH-hestosis, threatened abortion, preterm labours, uterine bleedings (Fig. 1, 2).
All these data were combined with the results of hormones concentration of feto-placental complex and
system of hemostasis, which allow us to suppose the possibility of complications like mentioned above.
The level of whole morbidity of pregnant women also increased, especially the level of anemia,
neurocirculatoric dystonia, pyelonephritis, pyo-inflammatory diseases (Fig. 3). That could be connected
with oppression of anti-infectious immunity system.
The structural and functional alterations in hypophysial-thyroid system has been found out in 46,9% of
pregnant. From 1993 we have observed hyperthyroxinemia. On the background of high level of
thyroglobulin, the level of thyroxine binding globulin was reduced. The alterations in state of
hypothalamo-hypophysial-thyroid system in newborns from mothers who are living within
contaminated areas are registered. The number of laboratory and transitory TTG-hypothyrosis raised
also.
Asphyxia takes the first place in structure of newborns morbidity, that could be explained by high
frequency of obstetric alterations. The level of fetal growth retardation syndrome is as much as 3 times
higher at the most contaminated regions (Ovruch, Narodichi, Polessye ) than in whole population. This
connects with retardation of placental growth, its vascular insufficiency, disorder of blood circulation,
which deteriorate the effect of radiation influence to fetal state. On the basis of study of immunity
system in newborns the groups of high risk development of autoimmunologic pathology in children
were created.

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FIG. 1. Incidence of pregnancy toxaemia in pregnant women who live in some controlled areas.

FIG. 2. Incidence of haemorrhage in some controlled areas.
FIG. 3. Dynamic of morbidity of pregnant women from controlled areas.

Besides the radiation factors the great influence to the health state of women and newborns have social, medical and biological ones.

The registry of pregnant and newborns was created with the aim of long-term observation under the pregnant women, the children and future generation, estimation of their health state and disorders in it. On the basis of these data the scientific programmes are fulfilled.

Based on registered alterations were carried out algorhythmes of prediction of obstetric and perinatal complications and complex of differential medical and prophylactic arrangements.