Estimation of medical care effectiveness in women with inflammatory diseases of generative organs

Ocena skuteczności opieki zdrowotnej nad pacjentkami z chorobami zapalnymi narządów rozrodczych

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Wstęp. Śmiertelność okołoporodowa (SO) jest jednym z głównych wskaźników demograficznych zdrowia, który pozwala na określenie skuteczności opieki zdrowotnej nad pacjentkami z chorobami zapalnymi narządów rozrodczych (ChZNR) – stanowiącymi szczególną grupę podwyższonego ryzyka społecznego.

Cel. Przeprowadzenie retrospektywnych badań SO – dla oceny skuteczności opieki zdrowotnej nad pacjentkami z ChZNR.

Material i metody. Na podstawie państwowych danych statystycznych zbadano poziom SO u pacjentek z ChZNR w regionie Grodna w latach 1999-2008.

Wynik. Po ustaleniu i wprowadzeniu do praktyki opieki zdrowotnej modelu organizacyjnego mającego na celu wzmocnienie zdrowia rozrodczego pacjentek z ChZNR, w regionie Grodna w latach 2004-2008 znacznie spadła (w porównaniu do okresu lat 1999-2003) SO – do 42,3% ($p<0,05$). W 2008 roku wskaźnik SO osiągnął najniższy poziom (4,1‰), który był znacznie poniżej średniego poziomu w kraju (5,0‰). Miejsce ChZNR w strukturze SO też uległo istotnym zmianom: w latach 2004-2008 zmiany zapalne w łożysku pacjentek były znacznie rzadziej rejestrowane (w 46,41±2,87% przypadków; $p<0,05$).

Wniosek. Wprowadzone w regionie Grodna w latach 2004-2008 działania mające na celu ochronę zdrowia rozrodczego pacjentek z ChZNR mają wysoką skuteczność medyczną i społeczną.

Słowa kluczowe: *śmiertelność okołoporodowa, choroby zapalne narządów rozrodczych*

Introduction. Perinatal mortality (PM) is one of the major demographic health indicators most objectively estimating medical care effectiveness in women with inflammatory diseases of generative organs (IDGO) – a group of increased health risk.

Aim. Retrospective studies of PM – for the assessment of efficiency of medical care in women with inflammatory diseases of generative organs.

Materials and methods. Based on the state statistical data of the Grodno region between 1999-2008 the level of PM in women with inflammatory diseases of generative organs was analysed.

Results. After establishing and introducing in practice an organizational model of medical care intended to improve reproductive health of women with inflammatory diseases of generative organs, the Grodno region in 2004-2008 recorded a significant decrease of PM (in comparison with 1999-2003) – to 42.3% ($p<0.05$). In 2008 the indicator of PM reached the lowest level (4.1‰), significantly lower that the average state level (5,0‰). The place of IDGO in the PM structure also changed: between 2004-2008 the inflammatory changes in patients' placenta were seldom registered (in 46.41±2,87% of cases; $p<0,05$).

Conclusions. The introduction in the Grodno region between 2004-2008 the activities focused on medical care of reproductive health of women with inflammatory diseases of generative organs has manifested high medical and social efficiency.

Key words: *perinatal morbidity, inflamatory diseases of generative organs*

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Introduction

Perinatal mortality (PM) is one of the major demographic health indicators most objectively reflecting the state of health of the population of the country and the level of development of public health services [1].

For the last years the rates of decrease of PM in Byelorussia were considerably big in comparison with the European countries. Nevertheless, there is a necessity of the further perfection of the organisation of obstetric care on the basis of a complex analysis of structure perinatal losses [2].

The decrease of PM leads to change of its structure [3]. In Europe and North America the congenital developmental anomalies (CDA) come out on top in the structure of PM, with approximately one third

during the first hours and days of life demanding urgent surgical treatment, and is accompanied by lethality of up to 80% [4]. In Byelorussia the CDA of a foetus and the newborn in the structure of PM throughout recent years take the second place, after the so-called separate states arising in perinatal period [1].

Despite the decrease of PM owing to the development of technologies of nursing of newborns, among more principal causes the classical triad remains: prematurity, congenital developmental anomalies, gipoxic-traumatic encephalopathies [5].

Appreciable losses in the early neonatal season are bound to under-term children, with body mass at a birth lower than 2500 g. Therefore nursing the seriously under-term children is important, due to their lethality being 20 times highger than among the full-term babies.

Practically in 80% of cases the pregnancy is accompanied by various kinds of pathology: anaemia, chronic pyelonephritis, cardiovascular diseases, and gestosis [1].

Abortions still remain the predominant means of preventing unplanned pregnancies. The prevalence of contraceptive use is low because of high cost of foreign preparations. Only a little more than 1/3 of women use modern agents of contraception. Spontaneous abortions and abortions under medical indications [1] also remain high.

The rendering of an out-patient obstetric care to women during pregnancy and in a puerperal period influences perinatal outcomes [6]. According to the demographic research and the review of a state of health of UNICEF, between 1990 till 2001 in 104 countries of the world the average of the women who were under antenatal observation reached 72% (without the quantity of visits). This indicator fluctuates from 98% in the educated industrial countries to 54% in Southern Asia. The number of physiologically normal births has been steadily reducing, i.e. fewer women can give birth to a healthy child without an active intervention of doctors, applications of medicines, special equipment and special procedures.

A relative analysis of a series of randomized research of antenatal help between 1992-2001 (at sufficient frequency of antenatal visits) showed that the majority revealed the decrease in prinatal mortalities, and more complex help for women. The dependence between frequency of antenatal visits, term of the first visit to the doctor and outcomes of pregnancy [1] was established. The system of observation existing in Belarus provides 14-16 visits to the obstetrician-gynecologist by the pregnant woman.

The procedures in case of risk among pregnant women are now the subject of scientific discussions. The system of assessment has not justified itself: it becomes perceptible, as in perinatal risk unfavorable perinatal outcomes meet low degree often enough. It is considered that at least 15% of pregnant women in ante- or the intranatal season have serious complications, even at good health and with high-grade antenatal service [7].

The current situation and forecasts of experts do not allow for immediate prospects of improving the health of pregnant women and newborns. According to routine inspections, the case rate of teenage girls in the last 20 years increased more than twice. The frequency of gynecologic diseases among them is 10-12%, and at women of fertility age it raises to 40-60% [4].

Modern state and tendencies in a case rate of women and newborns generate the closed cycle: a sick foetus – a sick child – a sick teenager – sick parents. The duration of this cycle compounds 20–25 years, and with each new cycle the pathologies in foetuses and newborns increase [1].

Taking into consideration the complex social and economic situation, special attention should be focused on collecting more detailed information for the purpose of understanding the current situation and working out adequate programs for dealing with essential problems in the sphere of genesial health (GH) and further decrease of PM [8]. Unfortunately, the official statistics, both on national and regional levels, give only generalised information that does not allow for an analysis of interrelations between the indicators of GH and the factors defining these indicators, necessary for the acceptance of correct organizational decisions in a given sphere.

In an administrative cycle the analysis of activity results precedes planning and serves as an assessment of the developed position, and own possibilities. Besides, the analysis allows for defining the causes of the deflections arising during the performance of plans. The closing stage of the activity analysis follows the final control, closing the administrativecycle, and serves for an assessment of achievements. In this sense the retrospective analysis consisting in an assessment of rendering perinatal help in a retrospective show can be considered reference and gives the chance to estimate real efficacy applied in perinatal technologies.

The assessment of quality of rendering assistance in perinatal period is made possible by categorising all cases of perinatal losses [9]. The search of the paths should be a problem of any classification of PM, allowing to perceive the causes of the given phenomenon and, accordingly, to prevent the possibility of perinatal losses.

As PM can be categorised by the use of various means, a considerable quantity of various classifications was offered [10]. Most widespread of them is the so-called Aberdeen-classification (1954) which surveys each case of perinatal mortality according to the factors initiating the chain of events that led to a lethal outcome [11].

For the purpose of perfecting perinatal help and to decrease PM in the State of Wisconsin (USA) a project Scbeider was offered (1974). For the program to work out a special group of representatives of the conforming trades and scientific disciplines were cooperating. Then the system of perinatal preservation was confirmed by the federal government in 1976 and introduced in the majority of states of the USA, which led to an appreciable decrease of PM [12].

A widely known classification of PM was offered by J. Wigglesworth (1980) which provides separation of all cases for allowing accurately to define necessary clinical intervention for the prevention of losses [13].

The Swedish register of all cases of perinatal losses (NICE) was offered for carrying out epidemiological research [14].

The purpose of use of the Baltic classification of perinatal mortality offered in 1995 is to define potentially preventive cases of perinatal losses by rendering assistance at various stages: antenatal, intranatal and neonatal [15].

Despite a considerable quantity of classifications of the causes of perinatal mortalities none can be considered complex as they do not cover pregravidal stage of rendering of the obstetric-gynecologic help and do not consider anamnestic and socially-demographic factors, making essential impact on an outcome of pregnancy.

Therefore the problem of building a new procedure of complex analysis of perinatal losses in patients with inflammatory diseases of generative organs (IDGO) with perinatal coverage of rendering of the obstetric-gynecologic help and considering anamnestic and socially-demographic factors is actual. Besides, the introduction of improved procedures will correspond to the statistical standard of the World organisation of public health services according to which the information on the newborn should be accompanied by a detailed perinatal analysis.

Aim

Building the procedure of a complex analysis of PM for the subsequent acceptance of the organizational-administrative measures reflects on the decrease and on the development of scientifically-proved measures of control by a protection service of motherhood and childhood.

Material and methods

- State statistical forms reporting the 1-help for pregnant women «the Report on medical aid to pregnant women, parturient women and women in childbirth» and 1-children «the Report on medical aid to children», the Ministries of statistics confirmed by the Decision and analysis of Byelorussia from 2007.11.01 years no 382;
- An out-patient card of the patient; an individual card of the pregnant woman and the woman in childbirth; medical history; history of development of the newborn (a case history of the inpatient) – in case of an early neonatal mortality;
- The report of analysis of case of PM in the public health services organisation (HSO);
- The review of the employee of chair of obstetrics and gynecology and pediatrics (on a case of an early neonatal mortality);
- The report of pathoanatomical dissection;
- The decision of clinical-anatomic conference on the analysis of PM case:
- A repetition of the order of head physician of HSO (at its edition);
- The questionnaire form developed by us on the dead (mortinatus) child.

Results

The procedure of PM analysis is based on the statistical standard of the World organisation of public health services and considers anamnestic and socially-demographic factors (all – 215 parametres).

The use within the limits of procedure of the state statistical reporting forms and the developed standardised and formalized Cards of an expert assessment and organizational algorithm have allowed for a complex study with the application of information technologies each of 759 cases of PM in the Grodno region in 1999-2008, to estimate the dynamics of an indicator and its components, to carry out an analysis of the structure of causes of PM in administrative areas, to define volumes and quality of medical observation over patients in pregravidal stage, during pregnancy and in a puerperal period with revealing the negative deflections in each case of perinatal losses with a formulation of common faults in the activity of obstetric-gynecologic service (OGS).

On the basis of a complex analysis of all stages of rendering medical care and the recorded negative deflections, the organizational-administrative decisions reflecting on the further decrease of PM have been developed and made, and also the scientifically-proved actions for the control of motherhood and childhood protection service, including strengthening reproductive health (RH) of patients with IDGO.

Besides, the application of the given procedure has allowed for estimating a complex medico-social efficacy of the actions realised within the model limits.

The procedure of carrying out of an analysis of PM was approved in 1998-2008 to control public health services of the Grodno regional executive committee and includes the following stages.

1. All cases of PM are subject to pathoanatomical research. Within 10 days the pathoanatomical service gives the issued documentation to HSO.

2. In territorial HSO within 20 days from the moment of occurrence of a case of PM the analysis of each case at all stages of rendering medical care to the pregnant woman, to the parturient woman, the woman in childbirth and the child is done.

In regional maternity homes (perinatal centres) under the guidance of the main experts of controls of public health services, the regional executive committee (committee on public health services of the Minsk Executive Committee of the City Soviet of People's Deputies) organizes clinical-anatomic conferences for the analysis of all cases of PM (including early neonatal) mortalities.

By results of the analysis of a case of PM at the clinical-anatomic conference the decision (conclusion) about the treatment is offered by the conference chairman, its assistant or one of co-chairmen. The decision of the clinical-anatomic conference is signed by the chairman of the conference, the pathologist and the secretary.

In the decision of the clinical-anatomic conference the following points should be reflected:
- Short clinical-anatomic epicrisis,
- HSO in which the case of PM has occured, and the cause of offensive or a grave condition (natural course of disease, later the reference behind medical care, overdue rendering of medical aid, overdue diagnostics, irregular diagnosis, inadequate (irregular) treatment, abandoning hospitalisation, objective difficulties of diagnostics, etc.),
- In cases of apostatis of clinical and pathoanatomical diagnoses to specify its category (I, II or III) and the cause (insufficient inspection, difficulty of diagnostics, irregular veneering, a pathological rarity, a brevity of hospital stay, gravity of the state of the patient, etc.). In cases of coincidence of diagnoses, timeliness of the clinical diagnosis,
- The basic negative deflections in observation, inspection and treatment of the child (mother), and also in conducting of the medical documentation,
- References and conclusions in an assorted case.

The decision of clinical-anatomic conference on the analysis of PM cases in a 7-day term should be sent to the head physician of every HSO giving medical care to the pregnant woman, the parturient woman, the woman in childbirth and the child for data and acceptance of the administrative decision. One copy of the decision of the conference should be transmitted to the pathoanatomical office (unit) and stored in the report of pathoanatomical dissection.

By the results of the analyses of each case of PM in territorial HSO, taking into account the decision of clinical-anatomic conference, Cards of an expert assessment of case of PM are filled.

3. Not later than 20 days from the moment of the occurrence of PM case in organizational-methodical units of regional maternity homes (perinatal centres) the following medical documentation is transmitted:
- An out-patient card of the patient;
- An individual card of the pregnant woman and the woman in childbirth,
- Medical history,
- A card of the inpatient (in case of an early neonatal mortality),
- The report of an analysis of a PM case in every HSO with medical care for the pregnant woman, the parturient woman, the woman in childbirth and the newborn,
- The report of pathoanatomical dissection,
- The decision of clinical-anatomic conference on the analysis of the PM case,
- A repetition of the order of head physician of HSO (at its edition),
- A card of an expert assessment of a PM case.

4. Employees of organizational-methodical units (offices) transmit the received documentation for reviewing to the chairs pf obstetrics, gynecology and pediatrics of the medical university. In cases of PM the CDA reviewing is also carried out by employees of medicogenetic cents (units of medicogenetic consultation).

Reviewing should be finished within 7 days from the moment of reception.

The review should include:
- The analysis of the medical documentation;
- Volume and quality of treatment;
- Disadvantages of observation and treatment;
- An assessment of quality of analysis of a case in HSO (medical-supervisory commission, clinical-anatomic conference, the questionnaire etc.);
- Conclusions and offers.

5. Upon termination of reviewing all above-stated, the medical documentation arrives in organizational-methodical units (offices) of regional maternity homes (perinatal centres) where the employees carry out a complex analysis of PM in the region.

6. Employees of organizational-methodical units (offices) report on each case of PM and the statistical

data stated in forms of the state statistical reporting the 1-help to pregnant women «the Report on medical aid to pregnant women, parturient women and women in childbirth» and 1-children «the Report on medical aid to children», confirmed by the Decision of the Ministry of statistics and analysis of Byelorussia from 01.11.2007 years no 382 monthly with an accruing result is defined level of indicator PM in territorial HSO.

7. Employees of organizational-methodical units (offices) on the basis of the given medical documentation completeness and quality of filling of Cards make an expert assessment on each case of PM, if necessary – the data are specified.

On the basis of the received documentation and the given Cards of an expert assessment the computer database on all cases of PM is compounded.

8. Employees of organizational-methodical units (offices) on the basis of a computer database on all PM cases monthly with an accruing result carry out their complex analysis including:

- An obligatory assessment of dynamics of an indicator and its components in administrative areas (district, range),
- The analysis of structure of causes of PM in administrative areas (district, range),
- Volume and quality of medical observation on a pregravidal stage, during pregnancy, and a puerperal period (in case of an infantile mortality – the volume and quality of medical aid to the child in a maternity hospital and a specialised hospital are in addition analyzed), at out-patient-polyclinic level, level of rendering of the first help) with revealing the negative deflections in observation and treatment in each case,
- The analysis of socially-demographic characteristics of women in childbirth and mothers, when cases of PM have been registered,
- The analysis of quality of analysis of each case of PM in HSO (medical-supervisory commission, clinical-anatomic conference, the Card etc.) with revealing the negative deflections in each case,
- Conclusions and offers are formed.

9. A complex analysis of PM monthly till 25 dates following the accounting is transferred in control of public health services of regional executive committee (Committee on Public Health Services of The Minsk City Executive Committee) for the purpose of the further acceptance of administrative decisions on perfection of the system existing in regional perinatal observations, and also in organizational-methodical unit of Official body «Republican scientifically-practical centre «Mother and the child»

With the application of the developed procedure of the PM analysis we estimated the medico-social efficacy introduced in the Grodno region in 2004-2008 of the medico-organizational model of preservation of genesial health of patients with IDGO.

In 2004-2008 in comparison with the previous fifth anniversary level of PM in the area it is appreciable – for 42.3% has decreased ($p<0.05$). By 2008 the difference of the indicators of PM between the city and rural settlements to 0.1‰, which testifies that the medical aid quality improvement to rural inhabitants was reduced. In 2008 reached a minimum level of indicator of PM for a decade, 4.1‰ (fig. 1).

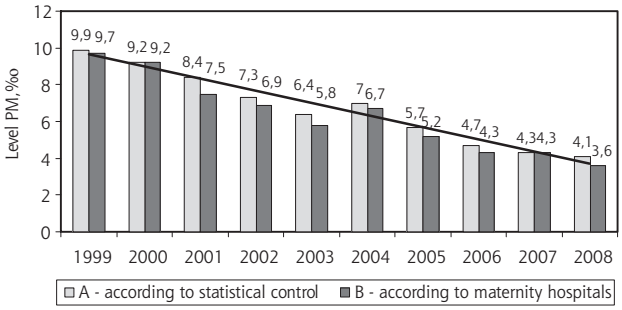

Fig. 1. Dynamics of PM in 1999-2008

In 2004–2008 in comparison with 1999-2003 the structure of PM (fig. 2) changed: the leading place was occupied with an asphyxia of a foetus because of disturbance of an uterine-platsentarno-funic circulation – 58.81±14.37%. The second rating place belonged to CDA in fetuses: 25.50±4.32 %. In the third place there appeared a pre-natal infection – 5.90±2.13%. The syndrome of respiratory disorders has taken the fourth rating place – 3.94±2.67%.

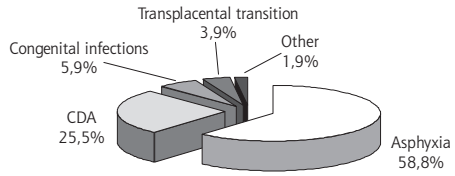

Fig. 2. Structure of PM in 2008

In 2004-2008 an appreciable decrease of mortality from a syndrome of respiratory disorders ($p<0.05$) was registered, and in 2008 of such cases was not.

The structure of PM change is bound to the reduction of pathological changes of inflammatory character in a placenta and a cord with 100.0±0.0% in 1999-2003 to 46.41±2.87% in 2004-2008 ($p<0.05$), a consequence of (simultaneous or consecutive) infections of various origin in different terms of gestation ($r=0.8479$). It has led to reduction of mid-annual number of cases (on 16) of stillbirths and an early neonatal mortality.

It is established, that the structure of PM change is caused by the introduction of perinatal technologies of medico-organizational model of preservation of RH in patients with IDGO.

As a result of perfecting the system of the organisation of pregravidal improvements, including the medicogenetic help in pregravidal stage and during pregnancy, the efficacy of prenatal diagnostics increased: in 2004-2008 in term till 22 weeks of pregnancy about 90 % lethal and sublethal CDA, and after 22 weeks – no more than 10 % (table I) were recorded.

Table I. Detectability of CDA in the Grodno region in 1999-2008 (in % to the general number)

Indicators	M±m		p
	1999-2003	2004–2008	
Annually recorded CDA	84.23±4.45	69.57±4.42	<0.05
Annually recorded CDA after 22 weeks of pregnancy	14.36±2.34	7.27±1.32	<0.05

As the result of perfecting the system of the organisation of pregravidal improvements (r=0.8341), including the medicogenetic help on pregravidal stage (r=0.7963) and during pregnancy (r=0.6893), the efficiency of prenatal diagnostics increased: in 2004-2008 in term till 22 weeks of pregnancy about 90% lethal and sublethal CDA in foetuses, and after 22 weeks – no more than 10% were recorded.

The number of GRL women whose pregnancies had been terminated in 12-22 weeks under medicogenetic indications was established; despite a specific gravity of discontinuings remaining within the decade under medicogenetic indications in the structure of terminated pregnancy (0.4-0.7%), in 2004-2008 it decreased to 48.3% ($p<0.05$) (fig. 3).

Besides, accurate dynamics of reduction of cases of revealing CDA of a neural tube in terms more than 12 weeks of pregnancy was registered, which in addition testifies to the improvement of quality of medical aid to patients with IDGO (fig. 4).

This, in turn, led ($p<0.05$) to the reduction of CDA of a neural tube in the structure of PM in 2004-2008 in comparison with 1999-2003 which in 2008 took last rating place, and their specific gravity made 6.3% (fig. 5).

The efficiency of the actions was expressed as the improvement also in reduction of PM from CDA.

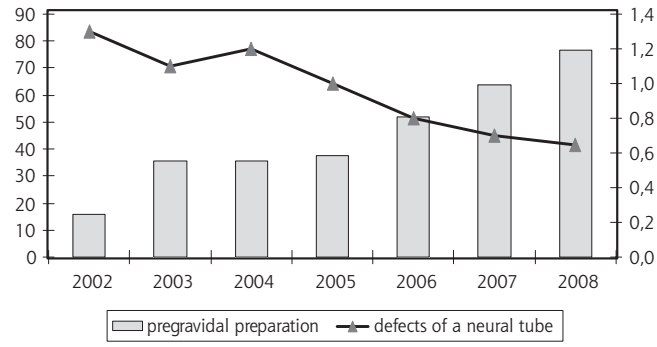

Fig. 3. Dynamics of coverage of pregravidal preparation (%) and frequencies of defects of a neural tube (‰) (foetuses + newborns) in 2002-2008

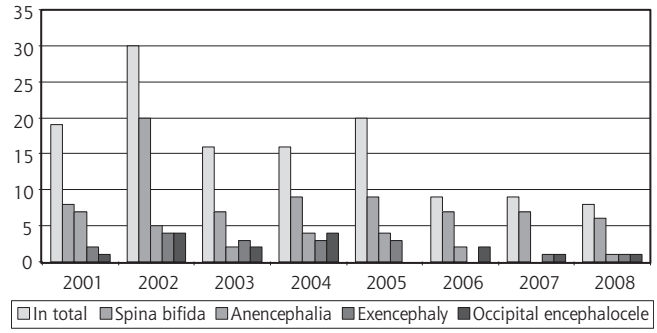

Fig. 4. Defects of a neural tube revealed in prenatal period in 2001-2008, in terms of pregnancy more than 12 weeks

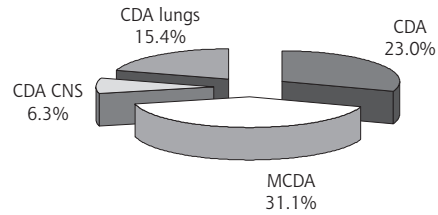

Fig. 5. Structure of PM from CDA in the Grodno region in 2008

Conclusion

Thus, on the basis of the developed procedure of the analysis of PM it has been shown that actions introduced in 2004-2008, in the Grodno region, of medico-organizational model of preservation of genesial health of patients with IDGO have high medico-social efficacy.

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