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Analysis of Structure and Risk Factors of Women Premature Birth in Kazakhstan

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Abstract: According to the World Health Organization (WHO) annually 15 million children are born "too early", >1 million these children annually-die. According to WHO data the index of premature births in the Republic of Kazakhstan on 100 cases of childbirth for 2010 made 8.8. To study the main indicators of premature births: abundance, analysis of structure, risk factors. In this research the structure and risk factors of premature births from 2011 for 2015 in the Republic of Kazakhstan were studied. In total, it was analysed 11,861 history of childbirth including 1806 premature. Retrospective, prospective data were analyzed. Calculation of the Relation of Chances (RC) Confidence Interval (CI) of risk factors of development of premature births is carried out. The structure of premature births looks as follows: 76.7% a premature delivery on medical indications from them induced premature births near-16%, a premature operational delivery-60.7%, spontaneous premature births made-23.3% including premature births as a result of prenatal izlity 11.5% of amniotic waters. The interrelation between social factors and premature births was studied taking into account the obstetric anamnesis. Education level (OSH-2.7; SE-0.29; DI (95%) 1.5-4.8) employment (OSH-2.4; SE-0.29; DI (95%) 1.3-4.1) and the place of residence of the woman (OSH-1.5; SE-0,29; DI (95%) 0.9-2.7) are statistically significant risk factors of development of premature births. Features of a course of pregnancy and somatic pathology of women whose pregnancy came to the end with premature births are studied.

Key words: Premature birth, risk factors, cervical failure, education, somatic

INTRODUCTION

Despite of medical advances according to data from World Health Organization (WHO) in the world 15 million of children are born "too early" annually, >1 million of them die every year. According to WHO the index of premature births in the Republic of Kazakhstan for 100 cases of birth is 8.8 in 2010. From January 1, 2008 in the healthcare organizations of Kazakhstan birth cases and children death are registered in accordance with WHO criteria. According to official data the periodicity of premature births in Kazakhstan in last 5 years remains 6.4% (Serbanescu *et al*., 2010).

Goal of research: estimate key figures of premature births: prevalence, analysis of structure, risk factors.

MATERIALS AND METHODS

The 11,861 labor and delivery medical records were studies including 1,806 premature births (15.2%) in the period 2011-2015. CF "UMC of National research center of mother and child health" Retrospective and prospective data was analysed. Premature birth progression risk factor's Odd Ratio (OR) Confidence Interval (CI) calculation is carried out. Age of premature labour women ranges from 18-42 years. Average age 29.2+/-3.4 years.

RESULTS

Index of premature births studied in the period is 15% that is twice higher from index of the republic and it is conditional upon concentration of patients with serious

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Table 1: Structure of premature births

Premature birth	2011	2012	2013	2014	2015	Mean value
Spontaneous	74 (20%)	73 (16%)	131 (34.5%)	93 (28.6%)	50 (18.3%)	84.2
Induced	55 (14.8%)	82 (18%)	74 (19.5%)	46 (14.1%)	31 (11.3%)	57.6
Cesarean section	242 (65.2%)	301 (66%)	175 (46%)	187 (57.3%)	192 (71%)	219.4

Table 2: Assessment of risk factors of premature births taking into consideration social anamnesis of women

Socio-demographic conditions	Cases n (%)	Controls n (%)	OR±SE
Low and average level of education	1033 (57%)	3309 (33%)	2.7 SE-0.29
Higher education	773 (43%)	6746 (67%)	OR (95%) 1.5-4.8
Unemployed/housewives	1124 (62%)	4085 (40.7%)	2.4
Working women	682 (38%)	5970 (59.3%)	SE-0.29 OR (95%) 1.3-4.1
Villagers	1173 (65%)	5562 (55.3%)	1.5
City dwellers	633 (35%)	4493 (44.7%)	SE-0 .29 OR (95%) 0.9-2.7

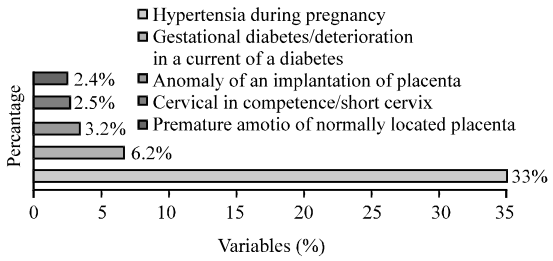

Fig. 1: Complications of this gestation course

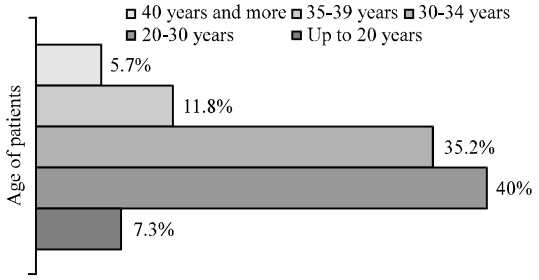

Fig. 2: Strutcture of premature births by age

obstetrical and extragenital pathology from North-East regions of the country. According to the results of the study, on average 5 years in the structure of the preterm the ratio of newborns with a body weight of 1500-2499 g is 69.7% (n = 1352) with a body weight of 1000-1499.0 g 18.7% (N = 363) with a body weight of 500-999 g is 11.6% (n = 227). Therefore, in the structure of preterm delivery, approximately 70% of births are at the age of 32 weeks and from 0 day to 36 weeks and 6 days; approximately, 18% are from 28 weeks and from 0 day to 31 weeks and 6 days and approximately, 12% are from 22-27 weeks and 6 days.

In causes structure of premature births preterm delivery on medical indications prevails-76.7% including induced premature births about 16%, preterm operative delivery-60.7%, spontaneous premature births is 23.3% including premature births in the results of predelivery discharge of amniotic fluid 11.5%. Therefore, half of spontaneous premature births start with predelivery discharge of amniotic fluid. The structure of premature births during the study period is presented in Table 1.

Basics reasons of induced premature births are statements of mothers on hypertensive condition of intrauterine fetal-25-33% of cases when pregnants with hard preeclampsia, eclampsia and HELLP syndrome in 6.2% with complication of diabetes, 3.2$% placentation anomaly were preterm delivered by birth induces and caesarian operations. One of major complications of preeclampsia is premature detachment of normally situated placenta, the periodicity of which during premature births was 2.3% (Fig. 1).

During study of social and demographic factors the premature births are frequent among women of age 20-30 years 721 (40%) 30-34 years 636 (35.2%) (Fig. 2). Also, among women with a premature birth, 65% of this country people, 62% were Housewives, 57% of low level and medium level of education. Also for the above-mentioned social indicateors odd ratio was calculated. On the difficulty of entry we have not analyzed risk factors such as everyday load during the working day (menal load, night, day, rush jobs, static work) social and economic aspects: household income, etc. and the following was obtained (Table 2).

Thus, the education level (OR-2.7; SE-0.29; CI (95%) 1.5-4.8) employment (OR-2.4; SE-0.29; CI (95%) 1.3-4.1) living place of women (OR-1.5; SE-0.29; CI (95%) 0.9-2.7) are statistically significant factors of premature birth progression risk. During analysis of obstetric history of pregnants 14.2% were primigravidas, 85.8% were multigravidas accordingly, 26.3% had perinatal loss syndrome (2 and more spontaneous abortion) 32.2% had prodormal premature births, 2.4% had cervical failures. Results of calculation, odd ratio of risk factors related to mother and fetus state of health are reflected in Table 3.

As shown on Table 3, statistically significant risk factors related to mother and fetus state of health that affect premature births are: multiparity 4 and more pregnancies (OR-1.19; SE-0.3; CI(95%) 0.7-2.2) uterine scar after undergone cesarean operation (OR-1.2; SE-0.29; CI (95%) 0.7-2.1) previous fetal losses (OR-1.65; SE-0.35; CI (95%) 0.8-3.2) birth of newborn in anamnesis <2500 g

Table 3: Assessment of risk factors of premature births taking into consideration obstetric history of women

Obstetric history	Cases n (%)	Controls n (%)	OR±SE
Multiparity (≥4 deliveries)	Yes	Yes	1.19
	561 (31%)	2754 (27.3%)	SE-0.3
	No	No	OR (95%)
	1245 (69%)	7301 (72.7%)	0.7-2.2
Previous caesarean section	Yes	Yes	1.2
	725 (40.1%)	3598 (35.8%)	SE-0.29
	No	No	OR (95%)
	1081 (59.9%)	6457 (64.2%)	0.7-2.1
Previous abortion (≥2)	Yes	Yes	1.65
	476 (26.3%)	1786 (17.8%)	SE-0.35
	No	No	OR (95%)
	1330 (73 .7%)	8269 (82.2%)	0.8-3.2
Cerclage/obstetric pessary	Yes	Yes	7.53
	45 (2 .5%)	34 (0.3%)	SE-0.22
	No	No	OR (95%)
	1761(97.5%)	10021 (99.7%)	0.3-30.0
Previous preterm birth	Yes	Yes	2.66
	583 (32.2%)	1524 (15.1%)	SE-0.35
	No	No	OR (95%)
	1223 (67.8%)	8531 (84.9%)	1.3-5.3
Previous newborn under 2500 g	Yes	Yes	2.38
	487 (27%)	1347 (13.3%)	SE-0.37
	No	No	OR (95%)
	1319 (73%)	8708 (86.7%)	1.2-5.1

(OR-2.38; SE-0.37; CI (95%) 1.2-5.1) previous premature births (OR-2.66; SE-0.35; CI (95%) 1.3-5.3) and meaning of cervical failure should be specifically mentioned (OR-7.53; SE-0.22; CI (95%) 0.3-30.0) in premature births progress.

Presence of previous premature births in anamnesis increases their risk of it in following pregnancies up to 4 times, two premature births-up to 6 times. The risk of recurrent preterm delivery according to different authors varies over a wide range from 15-50% and higher, depending on the number of previous births and the period for which they have occurred. Mercer *et al.* (1999) in their study showed that women with a history of preterm birth is 2.5 times increased risk that future generations, too will be held ahead of schedule with the risk of recurrent preterm birth is inversely proportional to gestational age at the time of the previous birth. Premature births in anamnesis are frequently associated with their occurrence in future and it was reflected in our study.

Extragenital diseases appeared to be a background for pregnancy complication progress and preterm delivery for one of three patients. Among extragenital diseases the primary positions are taken by blood diseases (anaemia, thrombocytopenia) -33%, cardiovascular diseases (arterial hypertension, congenital and acquired failure of heart development) -10.9%, urinary track system diseases-6.7% and digestive system diseases-4.5%. Received results confirm the data of WHO that indicates to anaemia as a risk factor of premature births, especially in underdeveloped countries. Problems of somatical health of patients with premature births defined high frequency of fetus functional status disorder-21% (373) abnormal development of fetus-4.3% (79) fetopathy affected by diabetes-5.4% (99) fetus status disorder in the result of rhesus incompatibility-4.5% (82). The 25.3% (458) fetus critical condition that appeared to be endeixis of urgent preterm delivery. Thus, the intrauterine fetal status is closely related to frequency rise of premature birth.

DISCUSSION

Frequency of premature births in Kazakhstan is 6.4% in specialized organizations of obstetric aid is 15%. Every third of four women (76.7%) the premature birth was brought by mother's state of health. Generally, this hypertensive state or complications of pregnancy in the form of preeclampsia, eclampsia, heart, blood diseases. Somatic diseases of mother may be not only a warning of development complications from mother's side but also from the side of intrauterine fetal, this is well-defined by the results of our study: intrauterine fetal functional status disorder appeared to be endeixis for delivery induction in 25%. Every fifth patient with endeixis for induction of delivery had growth retardation of intrauterine fetal, every fourth had a critical condition of fetus.

Spontaneous delivery in the structure of all premature births is 23.3%, half of them start from premature predelivery discharge of amniotic fluid. In our study during the analysis of obstetric history of preterm delivering women the risk factor is identified and it is a presence of cervical failure (OR-7.53; SE-0.22; CI (95%) 0.3-30.0) that is statistically significant in progress of premature births. Also, there identified risk factors related to mother's and fetus's state of health such as frequency

of premature births that is closely related to previous gestation courses and deliveries: multiparity 4 and more pregnancies (OR-1.19; SE-0.3; CI (95%) 0.7-2.2) uterine scar after undergone cesarean operation (OR-1.2; SE-0.29; CI (95%) 0.7-2.1) previous fetal loss (OR-1.65; SE-0.35; CI (95%) 0.8-3.2) birth of newborn in anamnesis <2500 g (OR-2.38; SE-0.37; CI (95%) 1.2-5.1) previous premature birth (OR-2.66; SE-0.35; CI (95%) 1.3-5.3).

Social figure of women with premature births appears to be the following: age from 20-34 years, mainly living in country side, housewifes with low and median level of education, multipara with regular loss of pregnancy or previous premature births and with cervical failure in anamnesis. The results of series of studies of last years confirm that risk assessment of patients with previous history of premature births or fetal losses in later gestation requires careful monitoring of cervix uteri state in comparison between patients without burdened anamnesis (Berghella *et al*., 2008).

Therefore for Kazakhstan this risk factors mattered in premature birth beginning. Similar data (Ancel *et al*., 1999) was examined in premature birth risk factors study in Europe. However, according to certain researchers (Derakhshi *et al*., 2014) age of mother work place, education had no statistical significance in relation with premature births. Based on this study findings the premature discharge of amniotic fluid, multiple fetation, hypertensive states, obstetric history, insuficiencia istmicocervical and mother's age >35 years in the aggregate increase the frequency of premature births.

CONCLUSION

Prevalence of premature births in Kazakhstan according to official data is about 6.4%. In our study, the frequency of premature births from studies 11.861 labour and delivery records is 15% (1.806). In the structure of premature births prevailed cases are the induced deliveries in the result of deterioration in the condition of mother and fetus.

Master risk factor of premature births is a health condition of mother, hypertensive diseases, heart and blood diseases. This women's health improvement is a realistic way of reducing the frequency of premature births in Kazakhstan.

The risk factors of premature births are mother's age, low and median level of education, living in country side, consecutive pregnancies with parity not >4% of premature births and fetus losses, birth of low birth-weight baby.

Family planning, pre-conceptional preparation of future mother and implementation of preventive measures of pregnant groups at high risk of premature births will bring to reduce of premature births frequency.

REFERENCES

Ancel, P.Y., M.J.S. Cubizolles, G.C.D. Renzo, E. Papiernik and G. Breart, 1999. Social differences of very preterm birth in Europe: Interaction with obstetric history. Am. J. Epidemiol., 149: 908-915.

Berghella, V., E. Hayes, J. Visintine and J.K. Baxter, 2008. Fetal fibronectin testing for reducing the risk of preterm birth. Cochrane Lib., Vol. 8, 10.1002/14651858. CD006843.pub2

Derakhshi, B., N. Esmailnasab, E. Ghaderi and S. Hemmatpour, 2014. Risk factor of preterm labor in the West of Iran: A case-control study. Iran. J. Public Health, 43: 499-506.

Mercer, B.M., R.L. Goldenberg, A.H. Moawad, P.J. Meis and J.D. Iams *et al*., 1999. The preterm prediction study: Effect of gestational age and cause of preterm birth on subsequent obstetric outcome. Am. J. Obstetrics Gynecology, 181: 1216-1221.

Serbanescu, F., P. Stupp and C. Westoff, 2010. Contraception matters: Two approaches to analyzing evidence of the abortion decline in Georgia. Intl. Perspect. Sexual Reprod. Health, 36: 99-110.