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Comparative characteristics of risk factors for the development of gallbladder pathology in pregnant women

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Abstract:

Background. Recently, especially among women of reproductive age, the observation of obstetric complications due to the presence of biliary tract pathology is increasing. In some cases, combined pathologies cause serious complications during pregnancy and childbirth.

Purpose. A comparative study of risk factors for the development of gallbladder pathology in pregnant women

Methods. In order to compare risk factors, pregnant women with gall bladder pathology were observed, as were pregnant women with hypertension and without biliary pathology.

Results. Among the research subjects, the majority are women with multiple births, obesity, and obstetric and gynecological complications.

Conclusion. The following risk factors were identified in the development of biliary diseases in pregnant women: older reproductive age, hypodynamic lifestyle, genetic factor, high parity, obesity.

Keywords: pregnancy, cholecystitis, risk factors

Introduction

In the last decade, the incidence of diseases of the gallbladder and biliary tract has been steadily increasing. De Bari O. [3], Uspenskaya Yu.B. [7], and other scientific researchers have found that during pregnancy, especially in the third trimester, the rate of gallstones and cholesterol stones increases significantly and is 30% and 12%, respectively. During the year after delivery, 1–3% of women with chronic cholecystitis turn to cholecystectomy due to the exacerbation of clinical symptoms of the disease or its complications [3, 7].

The scientific observations of Cheng W. and Matsushima K. (2020) show that cholecystectomy during pregnancy occurs in more than 40% of cases [2].

Saleh E.N., according to statistics provided by (2018), 10–20% of the elderly population in industrialized countries suffer from chronic cholecystitis at the same time, a steady "rejuvenation" of this pathology is noted [6].

Chronic cholecystitis is triggered in 30–35% of women during pregnancy, i.e., an exacerbation of clinical symptoms [4].

Recently, especially among pregnant women of young reproductive age, the observation of obstetric complications due to the presence of biliary tract pathology is increasing. In some cases, the combined pathologies cause serious complications of pregnancy and childbirth, including hypertension in pregnant women, preeclampsia, fetal growth retardation syndrome, toxic hepatosis, HELLP-syndrome and other

consequences that lead to perinatal losses, deprivation of a woman's reproductive organs, and sometimes even cause death.

Materials and methods We conducted a retrospective and prospective examination of 237 patients with diseases of the biliary tract living in the city of Tashkent during the period of 12-41 weeks of pregnancy. All examined pregnant women were divided into 3 groups:

Group I - the main group consisted of 133 pregnant women with diseases of the biliary tract, which were divided into 2 subgroups:

Group I A - diseases of the biliary tract, in particular, pregnant women with chronic stoneless and calculous cholecystitis, n = 101

Group I B - pregnant women with hypertensive syndrome, including gestational hypertension and preeclampsia, along with biliary tract pathology, n = 32

Group II - comparison group - pregnant women with hypertensive syndrome, including gestational hypertension and preeclampsia, but without hepatobiliary pathology, n=104

The control group consisted of practically healthy pregnant women who did not have gall bladder or biliary tract pathology and hypertensive conditions at the same time as the physiological course of pregnancy and childbirth, n=30

A questionnaire was drawn up and included: passport data, age, data on body structure, heredity (presence of diseases of the gallbladder and ducts in close relatives and their complications), time and duration of diagnosis of gallbladder pathology, work schedule and information on previous somatic and gynecological diseases entered. The specific characteristics of pregnancy, childbirth and the postpartum period were taken into account for all pregnant women.

Research results and their discussion

Anamnesis studies show that gall bladder pathologies, including chronic noncalculous cholecystitis, gallstone disease, gall bladder tilt or polyp, were observed in the mother or father or close relatives of both sexes. That is, in 39,3% of patients diagnosed with biliary pathology, according to the results of research based on anamnesis, a genetic predisposition to this pathology was noted. This indicator is divided between 23,1% and 16,2% of pregnant women in the main group between groups IA and IB. 81 (80,1%) of chronic acalculous cholecystitis, 14 (13,8%) of gallstone disease or chronic calculous cholecystitis, 6 (5,9%) of gallbladder polyps in group IA, in group IB 23 (71,8%), 7(21,8%) and 2(6,2%) respectively.

Based on the analysis of the obtained data, the age limit of pregnant women was observed to be between 19 and 41 years. The mean age in the main IA group is 26,3±5,3 years, in the IB group 29,7±5,5 years, in the comparison group it is 26,5±6,1 years, and in the control group is 23,6±0,9 years.

Pregnant women in the control group are also women of active reproductive age between 20 and 31 years old. The main difference is felt in the 19-23 age group, that is, this age group is the majority in the comparison group and statistically significantly different compared to the main group $p<0,05$.

During the study of the social status of our patients, it was found that the majority of them live in the city, that is, in group 1A 61 (61,6%) in the city and 40

(39,4%) in the village, in group 1B 21 (65,6%) and 11 (34,6%). We found 69 (66,3) and 35 (33,7%) in group 2, respectively 17 (56,6%) and 13 (43,4%) in the control group. It can be seen that urban women are more likely to have cholecystitis than rural women, which may be related to their physical activity and diet (fast food, ready-made meals).

Among the transferred diseases, the incidence of viral hepatitis A is very high, in particular, it was detected in 1/3 of patients in group 1B. These results Alidzhanova S.Sh. (2010) confirms the data, that is, in patients with viral hepatitis, biliary tract damage is present in 15-20% of cases. Chronic cholecystitis is detected during the diagnosis of other pathologies due to its latent course and slowness of symptoms. In 60% of patients diagnosed with calculous cholecystitis, previously conducted latent viral hepatitis was detected [1].

The incidence of neurocirculatory dystonia - prevails in group 1B at 12,5%. On the contrary, varicose disease was not observed in this group at all. However, pregnant women belonging to this group have a high share of repeated and multiple births.

Obesity showed a high score in all groups. The distribution of obesity in groups according to BMI is presented in Table 1. Pregnant women diagnosed with chronic cholecystitis and hypertensive syndrome have obesity in 25 (78,1%) of their cases. 62 (59,6%) women in the comparison group suffer from obesity. It is precisely the high level of obesity in groups with preeclampsia that proves its importance as a risk factor for the development of hypertensive conditions.

Table 1

Distribution of pregnants by body mass index, n = 267

Distribution of pregnant women			Body mass index				
			Normal weight (18,5-24,9)	Overweight (25-29.9)	Obesity degree I (30-34,9)	Obesity degree II (35-39,9)	Obesity degree III (40<)
Main group	IA n=101	Abs	18 (17,8%)	36 (35,6%)	33 (32,6%)	13 (12,8%)	1 (0,9%)
		M±m	23,1±1,5	27,07±1,4	31,9±1,4	36,9±1,3	58,1
	IБ n=32	Abs	-	7 (21,8%)	6 (18,7%)	11 (34,3%)	8 (25,0%)
		M±m	-	27,3±1,3	32,2±1,1	37,4±1,8	46,7±5,6
Comparison group, n=104		Abs	9 (8,6%)	31 (29,8%)	41 (39,4%)	14 (13,4%)	9 (8,6%)
		M±m	23,0±1,6	27,5±1,5	33,1±1,7	37,5±1,6	44,6±4,2

Control group n=30	Abs	26 (86,6%)	4 (13,3%)	-	-	-
	M±m					
Note: the indicators were statistically significant, p<0,05						

According to the analysis of the results of BMI, in patients in group 1A, obesity in the form of overweight prevails with 35,6% and I degree with 32,6%, while in group IB, II degree with 34,3% and III degree with 25,0% have a high rate. At the same time, according to the results of the research conducted, among pregnant women in the comparison group, the layer of BMI from 30-34,9 is more common, that is, it is 39,4%.

When analyzing the occurrence of iron deficiency anemia in pregnant women, it was found that it is present in one out of every two patients in groups 1 and 2. In the control group, 1/3 of pregnant women were observed despite the fact that they were selected as being practically healthy. Usually, despite the frequent occurrence of anemia during the gestational period, the presence of somatic pathologies in pregnant women causes them to spread more widely.

When studying the distribution of diseases of the urinary system, we observed that their highest rate was 58 (54,2%) in the comparison group with gestational hypertension and preeclampsia. This indicator is 4,1 times higher than the control group 4 (13,2%). Scientific evidence also supports these results. Plekhanov A.A. et al. (2018) report that gestational pyelonephritis is observed in 12,2-38,8% of cases [5]. We explain that pregnant women with kidney pathologies, which are more common in the comparison group, enter the risk group for the development of PE.

Studying the characteristics of reproductive function, that is, the number of pregnancies and births, their final results, allows to evaluate the role of obstetric anamnesis in the development of diseases of the biliary system and hypertensive conditions. At the same time, the presence of gallbladder pathology can also be a risk factor for the development of obstetric complications.

When analyzing the characteristics of the menstrual cycle between groups, no statistically significant differences were found. During the study, the average age of the first menstruation and its regularity were evaluated. Among the examined pregnant women, the onset of menarche in groups 1 and 2 was 12,9 ± 0,7 years and 13,1 ± 0,9 years (p=0,75), regular menstrual cycle was 97 (72,9%) and It was found in 26 (81,3%) women.

When studying the gynecological anamnesis in the main and comparative groups, we determined the following data according to the groups: Inflammatory diseases of the genitals (colpitis, chronic endometritis) 23,3% and 28,0%, cervical pathology (cercivicitis, erosion, scar changes) 12,2% and 13,4%, primary and secondary infertility – 8,3% and 14,6% were observed. Analysis of hormonal contraceptive use showed 32 (24,1%) in the main group, 4 (12,5%) in the comparison group, and 2 (6,6%) in the control group. The high use of hormonal drugs in the main group is explained by the high reproductive age of women in this group and the high

number of multiple births, the occurrence of menstrual cycle disorders is around 27,0%.

Table 2

Parity analysis of study subjects, n=267

Pregnancy parity	Main group				Comparison group, n=104		Control group, n=30	
	IA group, n=101		IB group, n=32					
	Abs	%	Abs	%	Abs	%	Abs	%
Primiparous	34	33,6	13	22,8	57	54,8	19	63,3
Para 2	19	18,8	3	9,3	18	17,3	9	30,0
Multiparous (3<)	48	47,5	16	50,0	29	27,8	2	6,6

According to the pregnancy parity study, the number of first-time mothers in group 2 was 1,2 times higher than in the main group (p< 0,05). On the contrary, among pregnant women with preeclampsia on the background of biliary pathology, the multiparous layer is one out of every two women. It can be concluded that the large number of pregnancies in a woman and the short birth intervals are the reasons for the observation of biliary pathology, and then hypertensive conditions based on somatic diseases. Changes in the balance of hormones during pregnancy and their frequent recurrence accelerate these processes. At the same time, the percentage of first-time mothers in the main and comparison groups (47 (35,3%) and 57 (54,8%)) requires a deeper study of risk factors and characteristics of the pregnancy process.

Taking into account that the number of multiparous pregnancies is a risk factor for the development of chronic diseases, in particular, chronic cholecystitis, we analyzed the ratio of the frequency of third, fourth, fifth and more pregnancies. Accordingly, in groups 1 and 2 there were significantly more women with a third or more pregnancies compared to the control group (p<0,05 and p<0,01). The total number of women with four or more pregnancies was 19 (18,8%) in group 1A, 10 (31,3%) in group 1B, and 8 (6,4%) in group 2. During the survey, it was revealed that group 1 had a significantly higher number of fifth or more pregnant women compared to the control group (p<0,05).

The highest number of pregnancies was observed para 8 in 2 pregnant women in the first group, para 9 in 1 pregnant women in the 2nd group, and 3rd pregnancy in 2 women in the control group.

According to the results of the survey, as shown in Table 3, obstetric complications in previous pregnancies were 50(37,5%) and 36(34,6%) in groups 1 and 2, respectively.

Table 3

Analysis of complications observed in previous pregnancies (abs.,%)

Description of obstetric	Main group	Comparis	Control

complications	IA group, n=101	IB group, n=32	on group, n=104	group, n=30
Spontaneous miscarriage	15(14,8)	9(28,1)	18(17,3)	2 (6,6)
Undeveloped pregnancy	9(8,9)	6(18,7)	9(8,6)	-
Medical abortion	2(1,8)	1(3,1)	3(2,8)	-
Antenatal fetal death	-	1(3,1)	2(1,6)	-
Premature birth	3(2,7)	2(6,2)	4(3,8)	-
Ectopic pregnancy	-	2(6,2)	-	
Total	29(28,7)	21(65,6)	36(34,6)	2(6,6)
Note: the indicators were statistically significant, p<0,05				

Thus, the number of spontaneous abortions in group 1B was significantly higher (p<0,03) than in groups 1A and 2, and occurred 4,2 times more frequently than in the control group. There were no significant differences in the number of medical abortions between the main and comparison groups. Undeveloped pregnancy has almost the same rate in groups 1A and 2 (p<0,01) and was found to be 2 times less common compared to group 1B, it did not occur at all in the control group.

CONCLUSION. Thus, the risk factors for the development of chronic cholecystitis are high reproductive age, a hypodynamic lifestyle, a genetic factor, the use of hormonal drugs, a high number of pregnancies and births, complicated obstetric conditions, and obesity.

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