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RISK FACTORS OF OVARIAN CYSTS AMONG ATTENDANTS OF GYNECOLOGICAL CONSULTATION UNITS IN AL-BATOOL AND AL-SALAM CITY UNITS IN MOSUL CITY

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INTRODUCTION

Ovarian cysts are commonly seen in women throughout their lifetime. They are divided into three main groups: Physiological or Ovulatory Cysts, benign and malignant (In the majority of cases, cysts are benign and can be managed conservatively. However, symptomatic ovarian cysts are likely to require surgical management.^[1] Ovarian cysts can develop from the neonatal period to post menopause. However, the majority of ovarian cysts occur during infancy and adolescence, which are hormonally active periods of development. Most of these cysts are functional in nature, meaning they are related to the normal menstrual cycle, and typically resolve without the need for treatment.^[2]

Epidemiology

Benign Estimates of the prevalence of ovarian cysts vary widely, with most authors reporting between 8% and 18% of both premenopausal and postmenopausal women having ovarian cysts. Most post-menopausal cysts persist for years.^[7]

In the United States, approximately 5% to 10% of women undergo surgical exploration for ovarian cysts in their lifetime though only 13% to 21% of these cysts are malignant. Presurgical evaluation of ovarian cysts is critical to prevent unnecessary surgical intervention while still detecting potential malignancy.^[8]

For the vast majority of women, ovarian cysts are not precancerous lesions and do not increase the risk of developing ovarian cancer later in life. Removal of benign cysts does not decrease future mortality from ovarian cancer.^[9,10,11] WHO.^[9]

Risk factors of ovarian cyst

- Age
- Obesity
- Not having children or not breastfeeding

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- Hormonal problem
- Pregnancy
- Endometriosis
- Severe Pelvis infection
- Previous ovarian cysts

• Smoking

AIM OF THE STUDY

The aim of the study to evaluate risk factors of development of ovarian cysts in 20 to 40 year old groups in gynecological consultation in Al-Salam and Al-Batool teaching hospitals to cover both sides of Mosul city.

Specific Objective

- To describe the sociodemographic character of the study population.
- To assess the risk factors of ovarian cyst among the study sample.
- To assess medical, surgical, family, drug, social history with ovarian cyst.

Study setting

The study was conducted in gynecological consultation unit in Al-Salam and Al-Batool teaching hospitals.

Study design

An observational, hospital based, Case control study was adopted in order to achieve the objectives of the present study. data was collected from the participants retrospectively by the non-randomized convenient technique. Verbal informed consent was taken and the modified questionnaire was used to assess the important risk factors that are associated with the development of ovarian cysts.

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Study Period

Data collection was done during six months period from the 2 nd of January 2024 to the 30rd of June 2024.

Study population

The study included Married women aged 20-40 years attending the gynecological and obstetrics consultation units at Al Batool and Al Salam Teaching Hospitals, Iraq/Mosul during the study period.

Sample size and technique

The study sample included 200 participants: 100 were cases and 100 were controls.

RESULTS

This is a case control study which involved 200 subjects. Half of them were considered as cases who had ovarian cysts, and the other half were in the control group. The aim of the study was to investigate ovarian cysts risk factors. Table 1 compares personal and social characteristics between cases and controls. For age category, a higher percentage of cases (63%) were in the 30-39 age group compared to controls (52%), with an odds ratio of 0.6, nearing statistical significance (p =0.056). Educational level showed a significant difference, with 40% of cases being illiterate compared to 16% of controls, yielding an odds ratio of 3.0 (p =0.034). Socioeconomic status also differs significantly; 45% of cases were in the low socioeconomic group versus 20% of controls, and 41% of cases were in the moderate group versus 74% of controls, with a protective odds ratio of 0.2 (p = 0.006), this could be due to most of studied women were in the moderate group. For body mass index (BMI), there was a stark contrast in the >40 category, with 15% of cases compared to 1% of controls, resulting in a 37.5 more risk of the high BMI group, this could be due to only 1 woman in the control group had BMI>40. Other categories, such as primary and secondary education levels, as well as BMI ranged from 30-35 and 35-40, did not show significant differences. These findings suggest that illiteracy and BMI >40 are significantlyassociated with the presence of ovarian cysts.

Table (1): Comparison of demographic characteristics between cases and control groups.									
		Cases		Controls					
		[n = 100]		[n=100]		Odd ratio	95% C.I.	P-value*	
		No.	%	No.	%				
A go ootogowy	20_29 y	37	37.0	48	48.0	0.6	0.4_1.1	0.056	
Age category	30 39 y	63	63.0	52	52.0	1.0			
Educational level	Illiterate	40	40.0	16	16.0	3.0	1.1_8.3	0.034	
	Primary	32	32.0	44	44.0	0.9	0.36_2.6	0.779	
	Secondary	18	18.0	28	28.0	0.8	0.3_2.2	0.620	
	High degree	10	10.0	12	12.0	1.0			
Socioeconomic status	Low	45	45.0	20	20.0	0.9	0.3_2.9	0.947	
	Moderate	41	41.0	74	74.0	0.2	0.1_0.7	0.006	
	High	14	14.0	6	6.0	1.0			
Body mass index	>40	15	15.0	1	1.0	37.5	2.1_6.62	0.013	
	35-40	9	9.0	18	18.0	0.6	0.2_1.6	0.316	
	30-35	1	1.0	12	12.0	0.1	0.01_1.8	0.838	
	25-29.9	52	52.0	41	41.0	1.5	0.7_3.0	0.218	
	18.5-24.9	23	23.0	28	28.0	1.0			

Table 2 presents a comparative analysis of the mean values for gravida, para, abortion, and the duration of menstrual bleeding between two groups, cases and controls, each consisting of 100 participants. The comparison reveals that a higher percentage of cases had a gravida count of 3 or more (68%) compared to the control group (76%), though the odds ratio of 1.5 was not statistically significant (p = 0.208). Similarly, the para and abortion variables showed no significant differences between the groups, with odds ratios of 1.4 (p = 0.232) and 1.6 (p = 0.106) respectively. However, the duration of menstrual bleeding was significantly longer in the cases group, with 80% experiencing bleeding for 7 or more days compared to 50% in the control group. The odds ratio for this variable was 4.0, indicating a strong association, and the result was statistically significant (p = 0.001). This suggests that prolonged menstrual

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bleeding is a distinguishing factor between the two groups.

Table 3.3 compares obstetric and gynecological history characteristics between cases and controls. Early menarche was more common in cases (37%) than controls (8%), with an odds ratio of 6.8 (p = 0.001), indicating a strong association with ovarian cysts. Long intervals between periods were also more prevalent in cases (63%) compared to controls (20%), with an odds ratio of 6.8 (p = 0.001). Heavy menstrual bleeding showed a notable difference, occurring in 54% of cases versus 12% of controls, with an odds ratio of 8.6 (p = 0.001). A longer interval between marriage and the first baby was more frequent among cases (40%) compared to controls (24%), with an odds ratio of 2.3 (p = 0.009). However, spacing between pregnancies did not show a

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significant difference, with similar high percentages in both cases (83%) and controls (78%) and a nonsignificant odds ratio (p = 0.199). These results suggest that early menarche, long intervals between periods, heavy menstrual bleeding, and a longer interval between marriage and the first baby were significantly associated with the presence of ovarian cysts.

Table 3.4 compares the past medical, surgical, and drug history between cases and controls using categorical variables. Hypothyroidism was significantly more common in cases (27%) compared to controls (6%), with an odds ratio of 5.8 (p = 0.001), indicating a strong association with ovarian cysts. There was no significant difference in the incidence of pelvic infection and endometriosis between the two groups, with odds ratios of 0.5 (p = 0.243) and 0.8 (p = 0.622), respectively. Previous surgery also showed no significant difference (p = 0.294). A previous condition of ovarian cysts was more frequent among cases (40%) than controls (28%), with an odds ratio of 1.7, approaching significance (p = 0.074). Family history of ovarian cysts was significantly higher in cases (43%) compared to controls (18%), with an odds ratio of 3.4 (p = 0.001). Infertility drug usage

was significantly more common in cases (29%) compared to controls (10%), with an odds ratio of 3.8 (p = 0.001), while hormonal drug use showed no significant difference (p = 0.642). These findings suggest that hypothyroidism, family history of ovarian cysts and use of infertility drugs, were significantly associated with the presence of ovarian cysts.

Table 3.5 compares lifestyle and habits variables between cases and controls. Smoking showed a slight difference, with 4% of cases being smokers compared to none in the control group, resulting in an odds ratio of 9.3, although this was not statistically significant (p =0.135). Eating processed food was more common in cases (27%) compared to controls (14%), with an odds ratio of 2.2, indicating a significant association (p =0.024). High sugar intake was significantly more prevalent in cases (52%) than controls (28%), with an odds ratio of 2.7 (p = 0.001) This suggests that while smoking did not show a statistically significant difference, the consumption of processed food and high sugar intake is significantly associated with the presence of ovarian cysts.

Table (3): Comparison of patients' obstetric and gynecological history characteristics between the two groups.									
		Cases [n = 100]		Cor [n=	ntrol 100]	Odd	95% C.I.	P-	
		No.	%	No.	%	ratio		value	
Early menarche	Yes	37	37.0	8	8.0	6.8	2.9_15.4	0.001	
	No	63	63.0	92	92.0	1.0			
Irregular cycle	Yes	63	63.0	20	20.0	6.8	3.6_12.9	0.001	
	No	37	37.0	80	80.0	1.0			
Heavy menstrual bleeding	Yes	54	54.0	12	12.0	8.6	4.1_17.7	0.001	
	No	46	46.0	88	88.0	1.0			
Long interval between	Yes	40	40.0	24	24.0	2.3	1.2_4.3	0.009	
marriage and 1 st baby.	No	51	51.0	70	70.0	1.0			
Spacing between	Yes	83	83.0	78	78.0	4.3	0.5_38.9	0.199	
pregnancies	No	1	1.0	4	4.0	1.0			

Table (4): Comparison of patients' past medical, surgical and drug history between the two groups.								
		Cases [n = 100]		Control [n=100]		Odd ratio	95% C.I.	P-
		No.	%	No.	%			value*
Uupothynoidigm	Yes	27	27.0	6	6.0	5.8	2.3_14.8	0.001
riypoutyrolaism	No **	73	73.0	94	94.0	1.0		
Delvis infection	Yes	4	4.0	8	8.0	0.5	0.1_0.6	0.243
Pervic infection	No **	96	96.0	92	92.0	1.0		
Endometriosis	Yes	8	8.0	10	10.0	0.8	0.3_2.1	0.622
	No **	92	92.0	90	90.0	1.0		
Duovious sungony	Yes	2	2.0	0	0.0	5.1	0.2_107	0.294
Previous surgery	No **	98	98.0	100	100.0	1.0		
Previous history of	Yes	40	40.0	28	28.0	1.7	0.9_3.1	0.074
ovarian cysts	No **	60	60.0	72	72.0	1.0		
Family history of	Yes	43	43.0	18	18.0	3.4	1.8_6.6	0.001
ovarian cysts	No **	57	57.0	82	82.0	1.0		
Drug history	Hormonal drugs	13	13.0	14	14.0	1.2	0.5_2.8	0.642
	Infertility drugs	29	29.0	10	10.0	3.8	1.7_8.4	0.001
	No drugs **	58	58.0	76	76.0	1.0		

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Table (5): Comparison of patients' lifestyle and habits between the two groups.										
Variables		Cases [n = 100]		Cor [n=	ntrol 100]	Odd	95% C.I.	P-		
		No.	%	No.	%	ratio		value.		
Smoking	Yes	4	4.0	0	0.0	9.3	0.4_176	0.135		
	No **	96	96.0	100	100.0	1.0				
Eating	Yes	27	27.0	14	14.0	2.2	1.1_4.6	0.024		
processed food	No **	73	73.0	86	86.0	1.0				
High sugar	Yes	52	52.0	28	28.0	2.7	1.5_5.0	0.001		
intake	No **	48	48.0	72	72.0	1.0				

CONCLUSIONS

The study concluded that illiteracy, BMI >40, early menarche, ir-regular cycle, heavy menstrual bleeding, a longer interval between marriage and the first baby, hypothyroidism, family history of ovarian cysts, use of infertility drugs, eating processed food and high sugar intake were a significant risk factors for ovarian cysts, a healthy lifestyle, such as reducing the consumption of processed foods and limiting high sugar intake, may help in preventing the development of ovarian cysts.

Recommendations

Based on the findings, the following recommendations are suggested.

- 1. Women with higher body mass index >40 may try to lose some weight in order to reduce the risk of ovarian cysts.
- 2. Women with early menarche, long intervals between periods, heavy menstrual bleeding, and longer intervals between marriage and first baby should be monitored for ovarian cyst development, women with hypothyroidism, family history of ovarian cysts, or using infertility drugs should also be closely monitored for ovarian cysts.
- 3. Furthermore, the study findings suggest that adopting a healthier lifestyle, such as reducing the consumption of processed foods

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