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A cross-sectional study of how to manage polycystic ovarian syndrome among infertile women in Al jabal Al Akhdar, Albayda ,Libya

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Abstract:

Polycystic ovary syndrome (PCOS) affects 5–18% of women, and is a reproductive, metabolic, and psychological condition with impacts across the lifespan. The cause is complex, and includes genetic and epigenetic susceptibility, hypothalamic and ovarian dysfunction, excess androgen exposure, insulin resistance, and adiposity-related mechanisms(1). This study aims to highlight the ages that are susceptible to developing polycystic ovary syndrome, identify diagnosis methods used in the Al bayda fertility center. At the same time the study aims to evaluate treatment choices which are used to manage PCOS in patients at the center. Out of 107 patients, about of 36 studied patient who had PCOS fell in the 26-30 age range, this was followed by patients whose ages bracket was 20-25 years old (n=30/107). A high percentage of patients whose age from 31-35 years old was recorded (n=27/107) in the current study the main diagnosis method used in the center is hormonal assay, followed by ultrasound and hysteroscopy with 97%, 74.30% and 20.95%respectively.according to our research the most treatment used for PCOS is metformin followed by celine with 80% and 65.71% respectively. Another high proportion were recorded for folic acid, vitamin D, weight loss and food supplement with approximately equal proportion(40%). according to this research the number of patient who got pregnancy after treatment was 31, while the number of those who did not get pregnant reached to 22 and the rest of them stopped follow up at the center, that the best chances of pregnancy were recorded for the age group from 26 to 30 at a rate of 41.9%, followed by the age group from 31 to 35 (25.8%), while the lowest percentage was for the age group from 36-40 (9.7%). Finally, there were no chances of conceiving for the age group from 41. Up to 45 (0%)

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 10, 2024

introduction

Polycystic ovary syndrome, a diverse endocrine disorder, impacts approximately 1 out of 15 women internationally. A significant disruption in hormones is the excessive production or effects of androgens, with a considerable number of women experiencing irregularities in insulin function as well. (2). Polycystic ovary syndrome heightens the chances of infertility, endometrial cancer, abnormal glucose metabolism, and dyslipidemia. Different approaches, such as modifying one's lifestyle, removing hair, and using combined oral contraceptives and other drug treatments, are being evaluated. (3).\ Identifying polycystic ovary syndrome in adolescence is difficult due to the fact that the criteria for diagnosing the syndrome involve typical bodily changes that happen during puberty. As individuals get older, the syndrome transitions from being a reproductive issue to becoming more of a metabolic condition(4). The vast majority of those who are affected show signs of hyperinsulinaemia. PCOS raises the chances of developing type 2 diabetes mellitus, gestational diabetes, as well as other complications during pregnancy, venous thromboembolism, cerebrovascular and cardiovascular incidents, and endometrial cancer(5). The cause of this syndrome is mostly unclear, but there is increasing evidence indicating that PCOS could be a complicated disorder involving multiple genes and heavily influenced by epigenetic and environmental factors, such as diet and lifestyle choices(6). Weight management is suggested as an initial treatment strategy for PCOS, with lifestyle changes including diet, exercise and behavioral interventions being the most effective way to achieve this(7).

Method:

This research will be conducted in Al bayda fertility center (A specialized center for the treatment of infertility, whatever its causes, as those concerned resort to it after a full year of their marriage without pregnancy).

This retrospective study took place during a 3-week period at the above-mentioned center. The study patients were attended to the center during 2021 (1st day of January to the last day of December of the same year).

In 2021 there were 400 patient profile had problem of conceiving about 107 patients of whom suffering from PCOS.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 10, 2024

Research and study design were divided into two stages: In the first stage (retrospective) the information was obtained from patient profiles which were included in the 2021 archive of the center. Then in the second stage classifying patients into groups according to diagnosis method, treatment used and if the pregnancy occur or not?.

The research divided into two parts:

a) Theoretical part: includes detailed explanation about PCOS.
b) Practical part: includes how consultants at Al-bayda center deal and manage PCOS.

An ethical approval of the Institutional Ethics Committee of the Omar Al-mukhtar University was taken before starting the study.

2.4 Procedures

The procedures were divided into three consecutive steps, the first step getting permission from the research committee and the data protection (ethic committee) officer at the studied center. The second step represented the theoretical framework which is the compiling of guideline comparisons which were discussed in the introduction of this research, and a third step which represented the practical framework and included the assessment of the prescribing pattern from the collected data.

2.4.1 Practical Framework

This is divided into three steps: data collection, data classification and statistical analysis.

A: Data Collection

In this part of the methodology, the following information was collected from patient profiles for patient with PCOS:

- Patient age.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 10, 2024

- Reason for referral.
- Patient medical history.
- Treatment choices.
- Investigation results.
- medications.

Information was collected for all identified PCOS patients at Al-bayda during 2021.

In the retrospective part the investigator went through 400 patient profiles where 107 PCOS patients were found.

B- Classification of data

After finishing data collection, the data was classified into different groups according to age, diagnosis method used, treatment choices and whether the treatment achieved the goal or not.

C- Statistical analysis

Following data collection, patients and their relative information were coded and placed in numerical sequence. A Microsoft Excel 2010 (Microsoft Corporation, Redmond, WA) spread sheet database was built to collate, quantify and analyse the data. Double checking to ensure minimal errors in data coding and data entries was made. The excel programme spread sheet was used with the appropriate formulas

to compile tables of summary statistics and to create frequency tables and charts of counts and percentages. Data was then exported into Statistical Package for the Social Sciences Version 20 (SPSS Inc, Chicago, USA) to carry out the necessary statistical evaluations and cross tabulations. Double checking to ensure minimal errors in data coding and data entries was made. The excel programme spread sheet was used with the appropriate formulas to compile tables of summary statistics and to create frequency tables and charts of counts and percentages.

The chi-squared test of association was applied to examine associations between age and pregnancy occurs, pregnancy induction and pregnancy occurs to evaluate whether the differences between their proportions could show any statistically significant variances. (Chi-squared test is used to determine whether there exists an association between two categorical variables. In the null hypothesis specified there is no association between the two categorical variables and this is expected if the p-value exceeds the 0.05 criterion. In the alternative hypothesis specified there is a significant association between the two categorical variables and this, except if the P-value is less than 0.05 criterion)

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 10, 2024

3. Results:

3.1 age:

About of 36 studied patient who had PCOS fell in the 26-30 age range, This was followed by patients whose age bracket was 20-25 years old (n=30/107). A high percentage of patients whose ages ranged from 31-35 years old was also recorded (n=27/107). The lowest percentage was indicated in 41-45 age brackets. Figure 3.1 shows the distribution of patient ages.

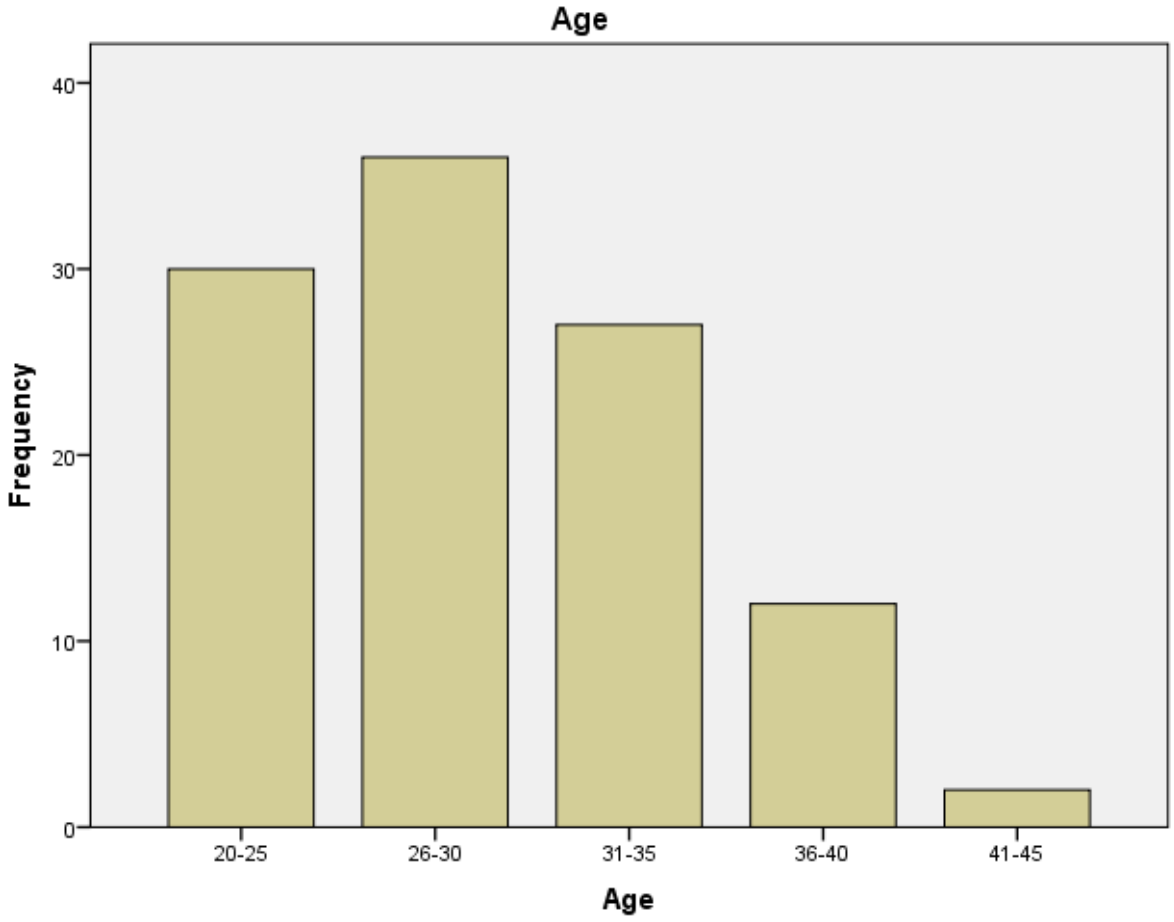

Figure 3.1: Distribution of patient ages (n=107)

3.2 diagnosis method:

figure 3.2 shows that the main diagnosis method used in the center is hormonal assay, followed by ultrasound and hysteroscopy with

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 10, 2024

97%,74.30% and 20.95% respectively. On the other hand the less diagnosis methods are fasting insulin and HSG with equal proportions (16.20%).

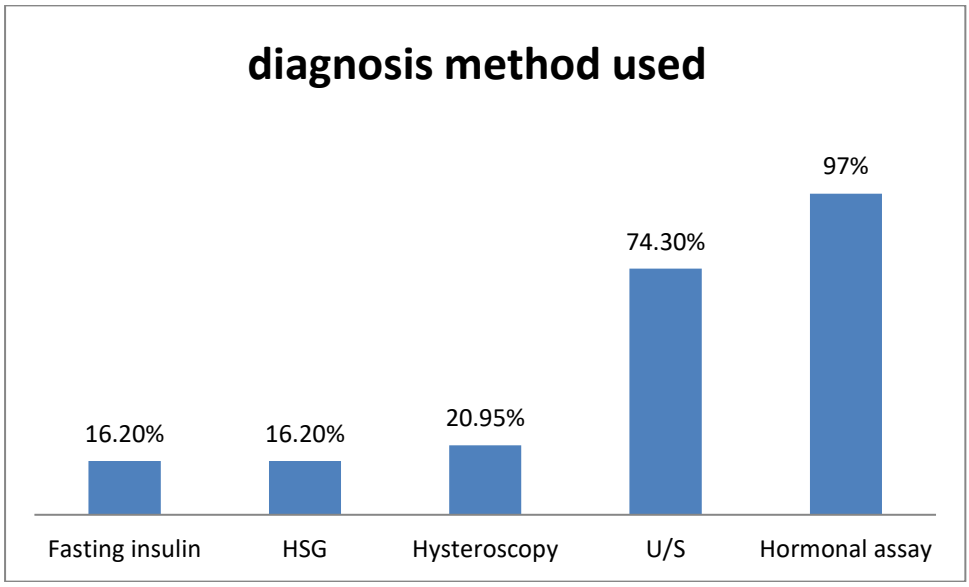

Figure 3.2 methods used for PCOS diagnosis

3.3 treatment strategies:

according to our study the most treatment used for PCOS is metformin followed by celine with 80% and 65.71% respectively. Another high proportion were recorded for folic acid, vit D, weight loss and food supplements with approximately equal proportions (40 %). On the other hand the less treatment used were ovulation induction, dostinex and aspirin with 22.85%,20.95% and 11.42% respectively.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 10, 2024

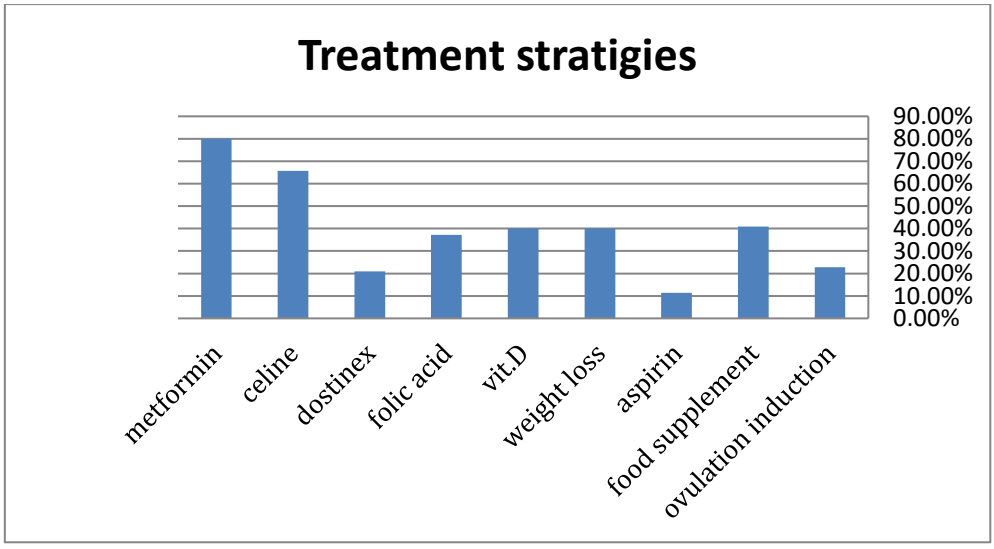

Figure 3.3 PCOS treatments

If we highlight ovulation induction (induction pregnancy) will find that 73 patients did not use induction but the rest do, 15% took fostimon which was the highest percent followed by duphastone, femara and clomid with 5 %, the lowest percent was for mengon (3%) as shown in table 3.1

Induction pregnancy

	Frequency	Percent	Valid Percent	Cumulative Percent
No induction used	73	68.2	68.2	68.2
fostimon	16	15.0	15.0	83.2
duphastone	5	4.7	4.7	87.9
femara	5	4.7	4.7	92.5
mengon	3	2.8	2.8	95.3
clomid	5	4.7	4.7	100.0
Total	107	100.0	100.0	

Table 3.1 ovulation induce used.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 10, 2024

3.3 pregnancy rate:

according to this research the number of patient who got pregnancy after treatment was 31, while the number of those who did not get pregnant reached to 22 and the rest of them stopped follow up at the center.

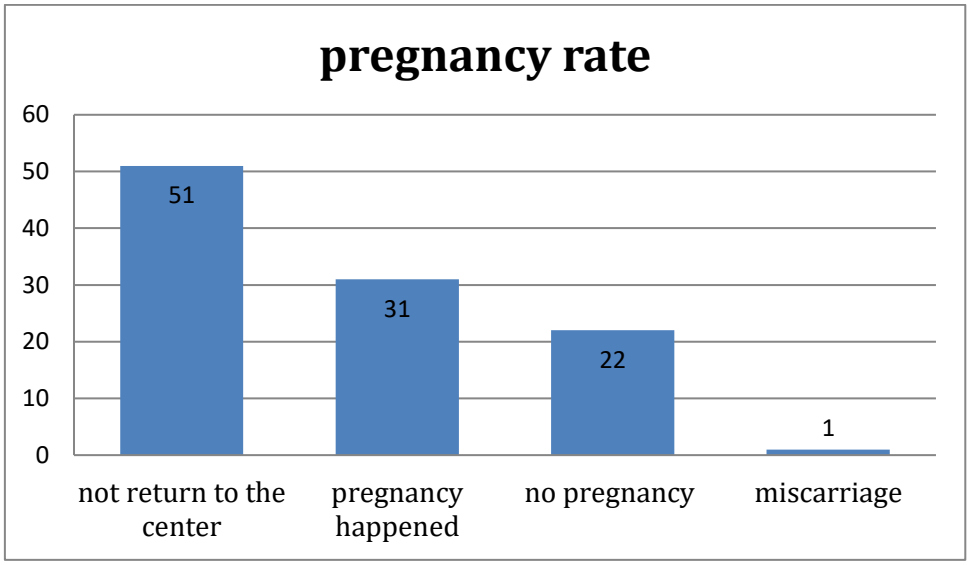

figure 3.4 pregnancy rate

out of 31 pregnancies, 18 cases induced by medication only and 13 cases result from using IUI (Intrauterine Insemination) technique, while the rest induced by ICS.

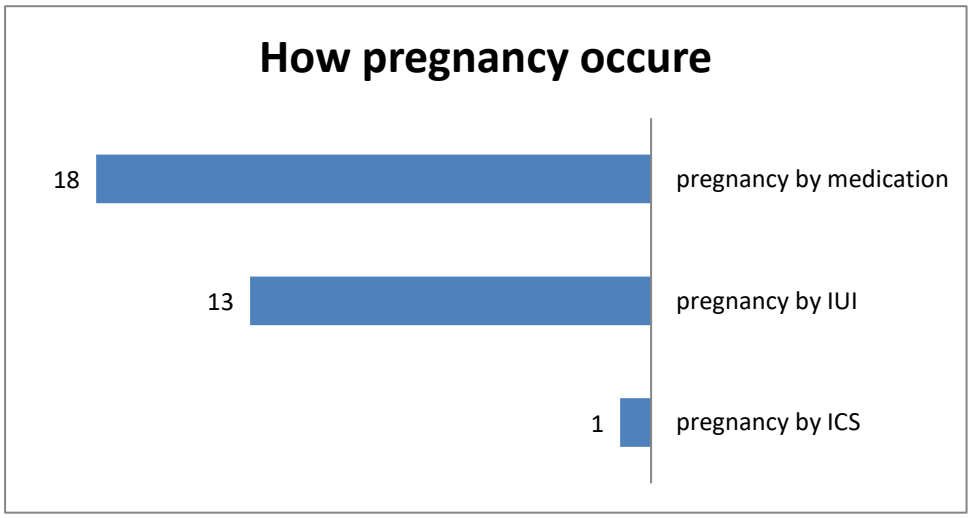

Figure 3.5 shows procedures used to induce pregnancy

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 10, 2024

Table 3.2 Age * Pregnancy occurs Crosstabulation

			Pregnancy occurs			Total
			occur	not occur	miscarriage	
Age	20-25	Count	7	22	1	30
		% within Pregnancy occurs	22.6%	29.7%	100.0%	28.3%
	26-30	Count	13	22	0	35
		% within Pregnancy occurs	41.9%	29.7%	0.0%	33.0%
	31-35	Count	8	19	0	27
		% within Pregnancy occurs	25.8%	25.7%	0.0%	25.5%
	36-40	Count	3	9	0	12
		% within Pregnancy occurs	9.7%	12.2%	0.0%	11.3%
	41-45	Count	0	2	0	2
		% within Pregnancy occurs	0.0%	2.7%	0.0%	1.9%
Total		Count	31	74	1	106
		% within Pregnancy occurs	100.0%	100.0%	100.0%	100.0%
Chi square test= 0.786						

From the previous table, we can conclude that the best chances of pregnancy were recorded for the age group from 26 to 30 at a rate of 41.9%, followed by the age group from 31 to 35 (25.8%), while the lowest percentage was for the age group from 36-40 (9.7%). Finally, there were no chances of conceiving for the age group from 41. Up to 45 (0%).

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 10, 2024

Table 3.3 Induction pregnancy * Pregnancy occurs Crosstabulation

			Pregnancy occurs			Total
			occur	not occur	miscarriage	
Induction pregnancy	no	Count	17	55	0	72
		% within Pregnancy occurs	54.8%	74.3%	0.0%	67.9%
	fostimon	Count	5	10	1	16
		% within Pregnancy occurs	16.1%	13.5%	100.0%	15.1%
	duphastone	Count	4	1	0	5
		% within Pregnancy occurs	12.9%	1.4%	0.0%	4.7%
	femara	Count	2	3	0	5
		% within Pregnancy occurs	6.5%	4.1%	0.0%	4.7%
	mengon	Count	2	1	0	3
		% within Pregnancy occurs	6.5%	1.4%	0.0%	2.8%
	clomid	Count	1	4	0	5
		% within Pregnancy occurs	3.2%	5.4%	0.0%	4.7%
Total		Count	31	74	1	106
		% within Pregnancy occurs	100.0%	100.0%	100.0%	100.0%

Chi square test=0.109

Table 3.3 shows that patients who did not use pregnancy induct had a better chance to get pregnant than those who did, at a rate of 54.8%. regarding pregnancy induction, the chances of pregnancy were higher for patients who was on fostimon (5%) followed by duphsatone (4%), while the lowest percentage was recorded for patients who used clomid.

4. results analysis

out of 107 patients, about of 36 studied patient who had PCOS fell in the 26-30 age range, This was followed by patients whose age bracket was 20-25 years old (n=30/107). A high percentage of patients whose ages ranged from 31-35 years old

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 10, 2024

was also recorded (n=27/107). A study carried out by Sheehan (2004) indicated that "Polycystic ovarian syndrome (PCOS) affects 4% to 12% of women of reproductive age."

In the current study the main diagnosis method used in the center is hormonal assay, followed by ultrasound and hysteroscopy with 97%,74.30% and 20.95% respectively. Homburg (2002) reported that "the diagnosis suggested by clinical symptoms by ultrasound, and the use of hormonal estimations if typical ultrasound features are not seen and for the purpose of defining subsets of the syndrome."

according to our research the most treatment used for PCOS is metformin followed by celine with 80% and 65.71% respectively. Another high proportion were recorded for folic acid, vit D, weight loss and food supplements with approximately equal proportions (40 %). On the other hand the less treatment used were ovulation induction (the most ovulation induction used in our sample was fostimon, followed by clomid, duphastone and femara (5%)while the lowest one was mengon), dostinex and aspirin with 22.85%,20.95% and 11.42% respectively. Another study carried out by Mangi at el (2022) disagreed with current study where they said " Clomiphene citrate is the first-line medication after weight loss that has been utilized in the past. Letrozole is supplanting clomiphene as the best option for ovulation induction for now, particularly in patients with PCOS. Metformin can improve ovulation and pregnancy rates; however, it has minimal effects in terms of raising live birth rates."

In this research the number of patient who got pregnancy after treatment was 31, while the number of those who did not get pregnant reached to 22 and the rest of them stopped follow up at the center. out of 31 pregnancies, 18 cases induced by medication only and 13 cases result from using IUI (Intrauterine Insemination) technique, while the rest induced by ICS. GUZICK at el (2007) said "Ovulation induction is the principal infertility treatment for women with polycystic ovarian syndrome (PCOS). Among PCOS patients who are overweight or obese, weight loss is the most physiologic method of inducing ovulation. For women in whom weight loss is not possible, or for lean women with PCOS, clomiphene citrate is an effective first-line method of ovulation induction. In clomiphene-resistant women, alternative treatments include adjunctive metformin or dexamethasone, aromatase inhibitors, or

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 10, 2024

ovarian drilling. If there is no pregnancy despite several cycles of successful ovulation induction, gonadotropin treatment should be considered, in which case in vitro fertilization is recommended as the safest and most effective strategy."

the best chances of pregnancy were recorded for the age group from 26 to 30 at a rate of 41.9%, followed by the age group from 31 to 35 (25.8%), while the lowest percentage was for the age group from 36-40 (9.7%). Finally, there were no chances of conceiving for the age group from 41. Up to 45 (0%) (Chi square test= 0.786 means no relationship between age and pregnancy chances) but in another study conducted by Van Noord at el (1999) said "After the age of 31 the probability of conception falls rapidly, but this can be partly compensated for by continuing insemination for more cycles. In addition, the probability of an adverse pregnancy outcome starts to increase at about the same age."

The patients who did not use pregnancy induct had a better chance to get pregnant than those who did, at a rate of 54.8%. regarding pregnancy induction, the chances of pregnancy were higher for patients who was on fostimon (5%) followed by duphsatone (4%), while the lowest percentage was recorded for patients who used clomid (Chi square test=0.109 mean there is no relationship between pregnancy and using pregnancy induction) this can be explained by a study carried out by Notaro at el where they found " metformin is a good adjunctive medication for ovulation induction/stimulation for high and low complexity assisted reproduction therapies. The adverse effects are mostly mild, and there is no risk of teratogenicity"

On the other hand study carried out by Ray Homburg (2003) suggested that " women with eu-oestrogenic anovulation (mostly with polycystic ovarian syndrome; PCOS) have first-line treatment with clomiphene citrate (CC), possibly with metformin. If CC fails, FSH is administered using a chronic low-dose protocol with small incremental dose rises."

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 10, 2024

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