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Epidemiological Study of the Prevalence and Correlation of Irritable Bowel Features with Certain Factors in PCO Patients

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Abstract:

PCOS is one of the most common endocrine disorders in women of reproductive age group ; though because of difference in diagnosis criteria employed, prevalence estimates vary widely from 2.2% to as high as 26% , however since the prevalence is different according to ethnic groups, a higher prevalence is expected among women of South Asian origin (including our country), where it was also reported to present at a younger age and with more severe symptoms [Wijeyarathe, C. N] .Bloating, though frequently complained of in those patients, yet not consistent or diagnostic of PCOS [PCO Diet Support] . Some of the inherent clinical features of the disease include obesity, higher prevalence of impaired glucose tolerance, type 2 DM, sleep apnoea than is observed in the general population. Those women are also risky for cardiovascular complications as well as gynaecological malignancies of the ovary and endometrium. Irritable bowel syndrome (IBS) on the other hand is estimated to be prevalent at 20% [Northman, R. J. et al., 2007], and although as many as 1 in 5 American adults has signs and symptoms of IBS, fewer than 1 in 5 of symptomatic patients seek medical help. Some of the disease symptoms are shared with serious other GIT diseases which may possibly be underdiagnosed in IBS patients. Bloating is feature commonly shared by both PCO and IBS , and though many aetiologies have been postulated, however stress and hormonal disturbances are two causes thought to be in common [PCO Diet Support]. Objectives of our study were to assess the relationship between the two disease entities, taking PCOS patients and trying to search the prevalence of irritable features as well as the relationship between those features and other parameters as age, severity, and onset since PCO diagnosis. In this aspect, our study found: a high prevalence (45%) of GI complaints in general and of irritable bowel syndrome in particular among those PCO patients, Among those with GI features, 65% were in the low age group compared with those without, and only minority (22%) had their GI complaints back before they were diagnosed with PCOS, whereas the majority (78%) had GI complaints starting after they had PCOS diagnosis. The majority (67%) of those with GI complaints had severe PCOS features rather than mild features.

Keywords:

PCO, IBS, GIT.

Introduction

Polycystic ovarian syndrome (PCOs), is a common disorder in gynaecology, reported to be encountered in around 20 % of patients [Green-top Guidelines, 2014], with the clinical manifestations of oligomenorrhea, hirsutism, and acne; often complicated by chronic anovulatory infertility and a higher prevalence for: obesity, impaired glucose

tolerance, type 2 DM, sleep apnea, than is observed in the general population [Northman, R.

et al., 2007] [Ethrmann, D. A, 2005]. They also exhibit an adverse cardiovascular risk profile characteristic of the cardiometabolic syndrome (combination of hypertension, dyslipidemia, visceral obesity, insulin resistance, and hyperinsulinemia) [Sathyapalan, T. et al., 2012] [Motah, L. et al., 2009]. The name polycystic ovarian syndrome describes the numerous small cysts (fluid- filled sacs) that form in the ovaries 2nd to hyperandrogenism, however, some women with this disorder do not have cysts, while others without disorder do develop cysts. Apart from this, bloating is frequently reported by PCOS patients, yet seldom evaluated in literature for the degree of correlation, severity, and any relationship with the irritable bowel features. Irritable bowel syndrome IBS, is a functional GI disorder characterized by abdominal pain and altered bowl habit in the absence of a specific and unique organic pathology [Schmulson, M. et al., 2017], is once again a common disease entity whose prevalence by population based studies is in the range of 10-20

%, [Lehre, J. K. et al., 2015]. This is usually underdiagnosed that less than one in five of those with symptoms seek medical help [Website article]. Although the signs and symptoms of IBS can vary widely from person to person and often resemble those of other diseases, however, abdominal bloating is amongst the commonly reported ones [Lehre, J. K. et al., 2015]. Additional symptoms include: clear or white mucorrhea of a non-inflammatory aetiology, dyspepsia, heartburn, nausea and vomiting, worsening of symptoms in the perimenstrual period [Website article]. In both disease entities, apparently bloating is shared [Website article], moreover, hormonal disturbance which is the main problem in PCOS, is also shared by IBS since it has always been suggested as one of the well- known episode triggers. In our study we tried to identify the possibility of a relationship between GI features with age, PCO severity, and with the onset of PCO diagnosis. The significance of our study comes for the following facts:

The high prevalence of both diseases in clinical practice
The significant health impacts that both diseases pose on patients' quality of life,
The fact that both diseases share a lot of disease triggers as stress, hormonal disturbance, special diet forms.
The absence of any regional or foreign studies to search for the possible correlation, which may later on help in understanding the pathophysiology and subsequently management of both of them,

Epidemiological approach (patients and methods)

1. Time frame:

Time taken for study completion, starting from the time of patient enrolment, data collection, analysis, till result acquisition and interpretation was about two years.

2. Study design:

This is a descriptive cross-sectional study, where PCOS patients fulfilling the inclusion criteria were consented, then relevant data acquired through submission to a questionnaire.

3. Subjects (study population):

Eligible patients for inclusion were those falling in the age group of 20 years and more, presenting with clinical, serological, ultrasound features sufficient for diagnosis of PCOs according to Rotterdam criteria [Rotterdam ESHRE/ASRM, 2004]. Exclusion criteria were factors that might be considered confounding in the evaluation of irritable bowel features as a known organic disease of the gastrointestinal tract like peptic ulceration, inflammatory bowel disease, gall stone, ..etc. as well as chronic medication consumption that might contribute to GI complaints.

Regarding sample size, because of the limited time allowed for the study, the patient enrolment has stopped after the ceiling of twenty patients has been reached.

The bowl features sought for defining IBS were adopted from the latest guidelines in this respect, and most recently published on the medical websites [Lehre, J. K. et al., 2015] [Website article].

4. Methods of data collection:

After case eligibility for inclusion determined, a questionnaire was given to each patient. Questions were focusing on any experienced irritable bowel features, the age of patients, as well as severity markers of PCOS whether clinical (hirsutism severity, acne or hair loss with dermatologist criteria adopted), serological (hormonal assays of serum testosterone), or sonographic (ultrasound picture of the ovaries).

Outcomes and statistical Analysis: Outcomes studied included: the prevalence of irritable bowel features among PCOS patients, and the frequency distribution of those features by certain patient criteria like age, onset since PCOS diagnosis, and severity of PCOS Significance of statical associations was studied by Qui square, and P values were always specified.

6. Study limits:

This is a descriptive study, neither analytic nor interventional and hence considered to be of a lower validity in determining statistical associations. The study was seeking the correlation between two disease entities through patients' judgement of experiencing some symptoms, a thing which is rather subjective and might be affected consequently by patients' education and motivation; that was basically attributed to the fact that IBS searched here is a functional disorder and no investigational procedure is used for diagnosis.

Results

1. Frequency distribution of PCOS patients by existent irritable bowel features. This is shown in table (1).

Among the 20 patients diagnosed with PCOS enrolled in the study, the frequencies of having one of the GIT complaints mentioned in the questionnaire, namely: abdominal pain (recurrent for at least 3 days in the last 3 months), abdominal distension (bloating), finally alteration in bowel habits, were as follows : 11 patients (55%) had none of them, whereas 9 patients (45%) had such complaints (five of them had 1-2 features, and four patients (20%) had 3 features, thus fulfilling the Rome 3 criteria for the diagnosis of irritable bowel syndrome).

2. Frequency distribution of irritable bowel features in PCOs patients by their age. This is shown in table(2).

All the patients enrolled in the study were less than 40 years old, with an age range between 23- 39 years old, by roughly dividing the patients into two age groups (20-29), (30-39), it turned out that: nine patients were in the lower age group, while eleven were in the higher age group. Among the 9 patients with irritable bowel features, five patients (56%) fell in the lower age group, and four (44%) in the higher. Whereas among those with no features, four of them (36%) were in the lower age group, and seven (64%) were in the higher age group. (No statistically significant difference, P value 0.395, qui square 1.836).

3. Frequency distribution of irritable bowel features in PCOs patients by their onset since PCO diagnosis. This is shown in table (3).

Among the nine PCO patients who had GI complaints: Two (22%) had GI complaints starting before being diagnosed with PCOS, (and of those: one had just two GI complaints, and one had three fulfilling the diagnosis of IBS). Seven (78%) had GI complaints at or after the time of diagnosis (and of those: four had just two GI complaints, whereas three had fulfilled IBS), Still no statistically significant difference between the two groups (P value 0857, qui square 0,033),

4. Frequency distribution of Irritable bowel features in PCO patients by the severity of PCOS, This is shown in table (4).

Patients of the study sample fell in 2 groups by severity of PCOS features: nine patients had less severe, and eleven patients had severe PCOS, Among the 9 patients who reported irritable bowel features, three (33%) fell in non-severe PCO category, and six (67%) fell in the severe one. Whereas among those 11 patients with no GI complaints, six (55%) had no severe, and five (45%) had severe PCOS features.

There was no statistically significant difference between the two groups (P value 0576, qui square 1.1019).

Table (1): ***Frequency distribution of study sample by existent irritable bowel features.***

	Irritable bowel features					
	No features		With features			
PCO patients	No.	%	One to two features No.	%	Three and more features No.	%
	11	55	5	25	4	20
Total					20	100
P value= 0.0397 X2= 6.45 NS						

Table (2): ***Frequency distribution of irritable bowel features in PCO patients by patients' age***

	Irritable bowel features					
	No features		With features			
Age of PCO patients (y)	No.	%	One to two features No.	%	Three and more features No.	%
20-29	4	36	2	40	3	75
30-39	7	64	3	60	1	25
Total	11	55	5	25	4	20
P value= 0.395 X2=1.8365 NS						

Table (3): ***Frequency distribution of the irritable bowel features in PCO patients by their onset since PCO diagnosis.***

	Irritable bowel features			
Onset since PCO diagnosis	One to two features		Three and more features	
	No.	%	No.	%
Before diagnosis	1	20	1	25
After diagnosis	4	80	3	75
Total	5	55.6	4	44.4
P value=0.8577 X2=0.03321 NS				

Table (4): ***Frequency distribution of irritable bowel features according to PCO severity.***

	Irritable bowel features					
	No features		With features			
PCO severity	No.	%	One to two features No.	%	Three and more features No.	%
Less severe	6	54.5	2	40	1	25
Severe	5	45.5	3	60	3	75
Total	11	55	5	25	4	20
P value=0.5764 X2=1.1019 NS						

Discussion

Patients with PCOS diagnosed based on the Rotterdam consensus criteria, have been given a questionnaire, basically asking about experiencing certain features that have been reported as necessary for the diagnosis of IBS, namely Rome 3 criteria; namely: abdominal pain or discomfort for at least 3 days per month during the previous 3 months associated with two or more of supporting features [Lehre, J. K. et al., 2015]. After analysing patients' 2wq responses, the following results came out:

1. The prevalence of irritable bowel features in patients with PCOs: This is shown in table (1):

Nine patients had these complaints (five with one to two features, and four with three and more features), contributing to an estimated prevalence of GI complaints as high as 45% (20% with sufficient criteria for diagnosis of IBS). Diagnosis of IBS was only made after a negative physical exam, and the patients were already only enrolled in the study after exclusion of any alarm features like family history of organic bowl disease, iron deficiency anaemia, or history of weight loss; sending for investigations to make up the diagnosis was not necessary according to the American College guidelines in this respect [Ruepert, L. et al., 2015] . Apparently this prevalence of GI complaints in general and of irritable bowel syndrome in particular is high, however, no previous reports pointing out to this high prevalence in literature was found to compare with, though the clinical practice as well as the survey over web sites has revealed that it is actually a common and popular combination that needs a a larger study sample that is reflective of the population

2. Correlation between age of the PCOS patients and the prevalence of the irritable bowl features, This is shown in table (2):

The majority of PCOS with irritable bowel features (56%) had their age falling in the lower age group, and the majority of those with no GI complaints (64%) fell in the older age group. These findings go with the literature reports of higher irritable bowel features in younger age groups, in this respect it has been found that the patients often retrospectively note the onset of abdominal pain and altered bowl habits in childhood, and that approximately 50 % of people with irritable bowel syndrome report symptoms beginning before they were aged 35 years. The development of symptoms in people older than 40 years does not exclude irritable bowel syndrome but should prompt a closer search for an underlying organic etiology [Lehre, J. K. et al., 2015]. On the other hand, no reports in literature were found about the age distribution of irritable bowel features in PCO patients to compare with. If that relationship proves true by wider scale studies, then doctors may alert the patients to symptoms that patients may ignore or underestimate compared to the original presenting PCO complaints, while they might be contributing in one way or another to the hormonal disturbance or its consequences that the patient is suffering from.

3. Correlation between the time of PCO diagnosis and the onset of GI complaints, This is shown in table (3).

Among the nine PCO patients who had GI complaints, only minority (22%) had GI complaints back before they were diagnosed with PCOS, whereas the majority (78%) had GI complaints starting after they had PCOS diagnosis, The aim of searching for this relationship was to investigate indirectly the existence of a causal relationship between the hormonal disturbance and the functional GI disturbance, as has been suggested in literature [Website article]. Even in the case where no predominant mode is there, it would be more probable that both disease entities are sharing a common underlying etiology, and that can be the neurological disturbance, which has been agreed upon in literature as being one of the contributory factors for PCO) [Baker, P. N], as well as irritable bowl [Lehre, J. K. et al., 2015].

4. Correlation between the severity of PCO features and the occurrence of GI complaints. This is shown in table 3:

Among 9 patients who reported irritable bowel features, the majority (67%) had severe PCOS features, whereas among 1 1 patients with no GI complaints, the majority 55% had less severe PCOS disease. These findings may support our findings in the previous section, that the correlation between having PCO and experiencing GI symptoms may be

attributed to a common factor that is shared by both of those disease entities, and that may be the element of neurological disturbance, hormonal disturbance, psychological (stress) [Website article]. Proving or disproving this relationship will help us in the issue of predicting the occurrence of GI complaints in patients with PCO from the severity of their disease state, and may then give prophylactic treatment on one side, or to link the relief of GI complaints to the treatment of the PCO derangement,

Conclusions

There is a high prevalence of irritable bowel features among patients with PCOS, reaching as high as 45%.

The majority of PCOS patients with irritable bowel features were of a young age group, with less prevalence of GI complaints as the patients get older.

The majority of PCOS patients with irritable bowel features report their complaints to have started after they have been diagnosed with

The majority of PCOS patients reporting irritable bowel features had severe PCOS signs, and the absence of bowl irritability was more in the less severe PCOS patterns.

Recommendations

Search of the possible relationship between PCOS and irritable bowl syndrome, through a larger, blinded study may help in a better understanding of the pathophysiology of both disease entities.

GI features are sometimes ignored or skipped to be mentioned by PCOS patients since outside the specially of the gynaecologist, raising direct questions to those patients may awaken their attention and help in diagnosing a coexisting bowl irritability,

In view of the high prevalence of those GI complaints in PCOS patients, this practice of direct questioning is highly recommended,

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