



ASSOCIATION BETWEEN POLYCYSTIC OVARY SYNDROME AND IDIOPATHIC INTRACRANIAL HYPERTENSION IN FEMALE REPRODUCTIVE AGE GROUP

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ABSTRACT

Introduction : Idiopathic intracranial hypertension (IIH) is characterised by elevated intracranial pressure and occurs predominantly in obese women in the reproductive age group. Signs and symptoms of polycystic ovary syndrome (PCOS) often coexist in IIH. Here we tried to establish the association of IIH with PCOS in our setup.

Material and methods: In this study we included all female patients of child-bearing age who are diagnosed as IIH by neurosurgical team between the year March 2010 to March 2016. All the suspected patients (according to NIH diagnostic criteria) with PCOS were listed. Women with suspected PCOS underwent testing for LH, FSH, testosterone, and 17-hydroxyprogesterone serum levels. These women were referred for ultrasonography to confirm polycystic ovaries and to serve as a base line for future follow up. The prevalence of PCOS in these women with IIH was compared with the reported prevalence of PCOS in the general population.

Results: During this period a total of 98 patients were diagnosed as IIH, 79 (80.61%) of them were women, which were included in our study. After proper history taking and clinical examination we found 31 of the 79 women (39.24%) as being at risk for PCOS (all had either oligo-/anovulation or clinical signs of hyperandrogenism). After reviewing the hormonal status and physical examination results, thirteen (13/79; 16.45%) had definite PCOS. Ultrasonography proved the presence of polycystic ovaries in all these women.

Conclusion: The results of our study indicate a distinct association of IIH with PCOS. We found that regularly the features androgen excess and obesity are variably present in polycystic ovary syndrome (PCOS) and idiopathic intracranial pressure (IIH).

KEYWORDS : polycystic ovary syndrome, idiopathic intracranial pressure, association

Introduction

The syndrome idiopathic intracranial hypertension (IIH) is generally thought of as a condition characterized by increased intracranial pressure (ICP) without evidence of dilated ventricles or a mass lesion by imaging, normal cerebrospinal fluid (CSF) content, and papilledema occurring in most cases in young, obese women without any clear explanation. Underlying and associated endocrinological abnormalities have been reported in numerous studies. Diagnostic criteria for IIH include signs and symptoms that reflect intracranial pressure (e.g., papilledema), documented elevated intracranial pressure with normal CSF cytology and biochemistry, no evidence of mass, structural, or vascular lesion on MRI, MR venography, or contrast-enhanced CT, and no other cause of intracranial hypertension. Treatment is aimed mainly to prevent visual compromise and alleviate headaches. Acetazolamide, weight loss, and correction of underlying risk factors, including endocrinological abnormalities, are recommended. Refractory cases to medical treatment require surgical intervention (optic-nerve sheath fenestration or thecoperitoneal shunting). The polycystic ovary syndrome (PCOS) includes truncal obesity, menstrual irregularities, hyperandrogenism with hirsutism, acne, alopecia, and multiple ovarian follicular cysts. PCOS is characterized by several endocrine abnormalities, including increased conversion of androstenedione to estrone by stromal cells within adipose tissue [3]. Insulin resistance is an usual finding in PCOS [4]. There are two main accepted systems for defining PCOS. According to the NIH criteria, two conditions have to be met: chronic anovulation and clinical or biochemical evidence of hyperandrogenism. Recently, the European Society for Human Reproduction and Embryology and the American Society for Reproductive Medicine (ESHRE/ASRM) suggested new criteria for the definition of PCOS. This is now defined as the presence of any two of the following conditions: (i) polycystic ovaries; (ii) oligo-/anovulation; (iii) clinical or biochemical evidence of hyperandrogenism. Glueck et al. reported an increased prevalence of PCOS in women with IIH, compared to the prevalence of PCOS in the general unselected population. Cosar et al. found supporting evidence, using MRI and MR venography studies in women with PCOS and headache, that PCOS may facilitate the development of IIH.

Material and Methods

In this study we included all female patients of child-bearing age who are diagnosed as IIH by neurosurgical team between the year March 2010 to March 2016. All the suspected patients (according to NIH diagnostic criteria) with PCOS were listed. Women with suspected PCOS underwent testing for LH, FSH, testosterone, and 17-hydroxyprogesterone serum levels. These women were referred for ultrasonography to confirm polycystic ovaries and to serve as a base line for future follow up. The prevalence of PCOS in these women with IIH was compared with the reported prevalence of PCOS in the general population. We compared our results with a study of recent past, which is one of the largest community based prevalence study of PCOS by March et al. the parameters of age, gender, height, and weight were compared with both groups. Proper consent was taken from the patients and the study design was approved by the institutional review board. Statistical analysis was done by SPSS software and a p-value of less than 0.05 was considered to be significant.

Results

We included in the study all the women, aged 18–50 years (mean = 33.45, SD = 11.38), who met the diagnostic criteria for IIH and were followed and treated at our neurosurgical clinic, between March 2010– March 2016. Patient characteristics are listed in Table 1.

	Range	Mean	Standard Deviation
Age (year)	18-50	32.37	11.23
Height (meter)	1.4-1.7	1.53	.045
Weight(kg)	43-98	72.23	25.62
BMI	29.94-44.45	32.22	10.32

We included in the study all the women, aged 18–50 years (mean = 33.45, SD = 11.38), who met the diagnostic criteria for IIH and were followed and treated at our neurosurgical clinic, between March 2010– March 2016. Patient characteristics are listed in During this period a total of 98 patients were diagnosed as IIH, 79 (80.61%) of them were women, which were included in our study. Follow up ranged between 1 and 7 years (mean = 3; SD = 1.56). Endocrinological abnormalities reflecting PCOS are listed in table 2 Table 2

Clinical manifestation	percentage
Irregular menstruation	73(92.4%)
Oligomenorrhoea	54(68.35%)
Abnormal hair growth	12(15.19%)
Acne	17(21.51%)
Weight gain	45(56.96%)

After proper history taking and clinical examination we found 31 of the 79 women (39.24%) as being at risk for PCOS (all had either oligo-/anovulation or clinical signs of hyperandrogenism). After reviewing the hormonal status and physical examination results, thirteen (13/79; 16.45%) had definite PCOS. Ultrasonography proved the presence of polycystic ovaries in all these women. When comparing the results of the current study to previous studies in the general population by March et al, we found no difference in age, weight, and BMI parameters (p -value < 0.002). When comparing the values found in our study to this previous report, having the same age, weight and BMI distribution, we found a significantly higher prevalence of PCOS among the IHH study group (16.45%) compared to the general population (8.7%).

Discussion

In our study we found that 39.24% of the patient with IHH were likely have to PCOS, but on further blood tests and an endocrinologist examination helped to define the diagnosis in 16.45% of patients. We found a significantly higher prevalence of PCOS among the IHH study group compared to the general population. The NIH diagnostic criteria for the diagnosis of PCOS were based on a consensus of experts, who concluded that women have PCOS if they present with the combination of chronic oligo- or anovulation and clinical or biochemical signs of hyperandrogenism. Ultrasonography and hematological examination were not carried out on women who did not present with clinical symptoms of PCOS, as was also the case in other community studies of PCOS prevalence. There may have been some women in this group who had hyperandrogenemia and polycystic ovaries but literature suggests that this is likely to be less than 1% of those with PCOS. Comparing the results of our study to previous studies in the general population having the same age and BMI distribution, we found a higher prevalence of PCOS using the NIH criteria among the IHH study group (16.45%) compared to the general population (8.7%). In some other studies using the NIH criteria, values were even lower standing at 6.5–6.8% [11-13]. The results of our study confirm a previously reported association between IHH and PCOS. Glueck et al. reported that in 38 women with IHH, 15 (39%) were found to have PCOS. In another study of 65 women with IHH, 37 (57%) were found to have PCOS. According to Knochenhauer et al. prevalence of PCOS (39%–57%) in women with IHH is 5 to 8 times greater than the 7% prevalence of PCOS in the general unselected population. Cosar et al. performed MRI and MR venography studies of the brain and orbit in women with PCOS and headaches and found that PCOS and headache are promoters of IHH. We found an association between PCOS and IHH, but in our study the prevalence was only nearly twice as common (16.45%) than the 8.7% prevalence of PCOS in the general unselected population. On the basis of these findings, this study verifies the argument of Glueck et al. the difference in prevalence may be a result of Glueck's use of the Rotterdam criteria for PCOS which are not as strict as the NIH criteria. Our study group is relatively small, but the group was compared to one of the most representative studies of PCOS prevalence and was found comparative in terms of clinical parameters. Addressing PCOS may help with the treatment of IHH by aiding weight loss and managing associated endocrinological abnormalities such as glucose intolerance and hyperandrogenism.

Conclusion:

There are limited study showing association between in polycystic ovary syndrome (PCOS) and idiopathic intracranial pressure (IHH). The results of our study indicate a distinct association of IHH with PCOS. We found that regularly the features androgen excess and obesity are variably present in polycystic ovary syndrome (PCOS)

and idiopathic intracranial pressure (IHH). But we suggest a larger number of studies in this matter to find out the etiopathological association of these conditions in details.

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