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Investigation of The Relationship Between Pelvic Girdle Pain and Interpubic Distance

Pelvik Halka Ağrısı ile İnterpubik Mesafe Arasındaki İlişkinin İncelenmesi

Elif Terzi[1], Özgür Kaya[2]

[1] Dept. of Gynecology And Obstetrics, Private Lokman Hekim Hospital, Ankara, Turkey

[2] Dept. of Orthopedics and Traumatology , Private Lokman Hekim Hospital, Ankara, Turkey

ORCID ID: Elif Terzi https://orcid.org/0000-0001-9809-0494, Özgür Kaya https://orcid.org/0000-0003-2033-9020

***Sorumlu Yazar / Corresponding Author:** Dr. Özgür Kaya, **e-posta / e-mail:** dr.ozgurkaya@yahoo.com

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Abstract

Introduction and objective To show that USG, which is used in routine pregnancy examination, can be useful in the diagnosis of pelvic girdle pain.

Materials and Methods In our study, the interpubic distance width was measured with USG in 287 patients who had routine pregnancy control in addition to their normal examinations. Necessary clinical tests were performed by orthopedics and traumatology specialist in order to clarify the diagnosis of pelvic girdle pain. The results were noted and IBM SPSS Statistics 20 program was used for evaluations and $p < 0.05$ was accepted as the statistical significance limit.

Results it was observed that the width of the interpubic distance increased in patients with pelvic girdle pain, and the interpubic distance did not exceed 10 mm in patients without pelvic girdle pain.

Conclusion In our study, a significant relationship was found between pelvic girdle pain and interpubic distance widening. We believe that it is useful to measure the interpubic distance with USG in the diagnosis of pelvic girdle pain.

Keywords pregnancy, pelvic pain, low back pain, ultrasonography

Özet

Amaç *Rutin gebe muayenesinde kullanılan USG nin pelvik halka ağrısı tanısında fayda sağlayabileceğini göstermektir.*

Materyal ve Metod *Çalışmamızda rutin gebelik kontrolü yapılan 287 hastanın normal muayenelerine ek olarak USG ile interpubik mesafe genişliği ölçüldü. Pelvik halka ağrısı tanısı netleştirilmesi açısından Ortopedi ve Travmatoloji Uzmanı tarafından gerekli klinik testleri yapıldı. Sonuçlar not edildi ve değerlendirmelerde IBM SPSS Statistics 20 programı kullanıldı ve istatistiksel anlamlılık sınırı olarak $p<0,05$ kabul edildi.*

Bulgular *Pelvik halka ağrısı bulunan hastalarda interpubik mesafe genişliğinin arttığı, pelvik halka ağrısı olmayan hastalarda interpubik mesafenin 10mm üzerine çıkmadığı gözlendi.*

Sonuç *Çalışmamızda pelvik halka ağrısı ile interpubik mesafe genişlemesi arasında anlamlı ilişki saptanmış olup; pelvik halka ağrısı tanısında usg ile interpubik mesafe ölçümü yararlı olduğu kanaatindeyiz.*

Anahtar Kelimeler *gebelik, pelvik ağrı, bel ağrısı, ultrasonografi*

INTRODUCTION

During pregnancy, which is a normal physiological process, the musculoskeletal system is affected as well as all systems of the body. Therefore, pain that can be seen during pregnancy and can sometimes be permanent after birth occurs, and it may affect the patient's quality of life and daily activities[1,2].

Low back pain and pelvic area pain are the most common musculoskeletal disorders during pregnancy. In some studies, it has been stated that it can be seen up to 80% during pregnancy[3]. Although low back pain and pelvic girdle pain during pregnancy are usually intertwined situations, they should be distinguished from each other.

Pelvic girdle means that symphyseal joint, sacroiliac joint, iliac bone and sacrum.Pelvic girdle pain is defined as the pain that can spread to the thighs and buttocks; felt in all pelvic bones, including sacroiliac joint, gluteal folds and especially the posterior iliac crest[4]. This terminology proposed for pelvic musculoskeletal pain exclude gynecological and/or urological disorders. It causes restrictions in activities such as standing, walking and sitting. It has been reported that its incidence in pregnant women is up to 20%[4]. It occurs during pregnancy can continue after birth. Among the etiology of pelvic girdle pain; hormonal, biomechanical, traumatic, genetic and degenerative factors can play a role[5,6].

Pelvic girdle pain is a condition that is generally ignored and not treated by clinicians and can cause permanent postpartum problems[7]. It has been shown that identification and treatment in early pregnancy is beneficial and reduces workforce loss[8]. Pelvic girdle pain should generally be done with a multidisciplinary team. Treatment of pelvic girdle pain should usually be done with a multidisciplinary team. The treatment protocol should include activity modification, prevention of acute exacerbations, orthoses for pelvic and lumbar support, exercise, and physiotherapy[9].

Since the pregnant, fetus and pregnancy should be protected, imaging methods can be used limitedly in the diagnosis of pelvic girdle pain as in other diseases in pregnancy. Anterior posterior radiography of the pelvis helps to reveal symphyseal dissociation and degeneration and cortical irregularities, but it is not recommended because of the effect of ionizing radiation on the fetus. MR imaging can be recommended during pregnancy to identify bone marrow and soft tissue changes. Ultrasonography can be used to detect the disease and to follow its progression[6].

In our study, in patients diagnosed with pelvic girdle pain, the interpubic distance relationship was evaluated with USG, and it was shown how routine ultrasonography can help in the diagnosis of Pelvic Girdle Pain during pregnancy follow-up.

MATERIAL and METHOD

The study was approved by the Lokman Hekim University Ethics Committee (2020/063-2020059) on 21/08/2020 and it was carried out in accordance with the Helsinki Declaration of Principles. 287 patients who applied to Gynecology and Obstetrics Clinic for routine pregnancy follow-up were included in the study. All patients included in the study accepted by signing the informed consent form. The patients included in the study were between 6-40 weeks of gestation and their ages between 18-39 years. Patients with previous pelvic or lumbar trauma or surgery were excluded.

Routine USG was performed by the obstetrician for each patient included in the study, and then interpubic distances were measured with the same USG device. Interpubic distance width was measured from the upper corners of the symphyseal joint as described by Björklund et al.[10] (Figure 1,2). Gravity-parity, age, gestational week and interpubic distance measurements of the patients were noted. Patients with low back and hip pain were referred to an Orthopedics and Traumatology specialist in order to distinguish it from pelvic girdle pain.

The patients were evaluated by an Orthopedics and Traumatology specialist. The diagnosis of pelvic girdle pain was clarified with the clinical tests described by Albert et al.[11] and pain was accepted as positive. The diagnosis of pelvic girdle pain was made in the patients whose posterior pelvic provocation pain test that has high specificity, Patrick's Fabere test, palpation of the pubic symphysis, Trendelenburg test and Mennell's test were positive.

Figure 1. 32 weeks pregnant woman without pelvic pain; the interpubic distance was measured as 7mm.

Figure 2. 29 weeks pregnant woman with pelvic pain; the interpubic distance was measured as 11.1mm.

Statistical Analysis

Mean Standard Deviation, Median, Minimum, Maximum values were given in descriptive statistics for continuous data, and number and percentage values were given for discrete data. Kolmogorov-Smirnov test was used to examine the conformity of the data to normal distribution.

Mann Whitney U test was used to compare the pain status with continuous data.

Spearman Correlation coefficient was used to examine the relationships between continuous data.

Chi-square test was used for group comparisons (cross tables) of nominal variables.

IBM SPSS Statistics 20 program was used for evaluations and $p < 0.05$ was accepted as the statistical significance limit.

RESULTS

The ages of 287 pregnant women included in the study ranged from 18 to 40 years of age and the average age was found as 26.13 ± 5.02. The median gestational week of the pregnant women (Median) was 26 (6-40) weeks and the median gestational number was 2 (1-4). The mean interpubic distance of all pregnant women included in the study was 6.49 ± 1.95 (Table 1).

Table 1. Pregnant women's descriptive statistics of measurements of the gestational week, number of pregnancies, age and interpubic distance

	Mean±SD	Median (Min-Max)
Age	26.13±5.02	26 (18-39)
Gestational week	24.28±9.88	26 (6-40)
Number of pregnancies	1.63±0.72	2 (1-4)
Interpubic distance	6.49±1.95	6.1 (3-12.7)

Pelvic girdle pain was detected in 18.5% of the pregnant women included in the study (Table 2).

Table 2. Pelvic girdle pain distributions of pregnant women		
	N	%
Pelvic girdle pain		
NO	234	81.5
YES	53	18.5

There was no difference between the age values of pregnant women with and without pelvic girdle pain (p> 0.05). The median gestational week of those without pelvic girdle pain was 24 (6-40), and 28 (8-38) of those with pain. There was a difference between the gestational weeks of the patients with and without pain (p <0.05). The gestational weeks of those with pain were significantly higher than those without pain.

There was no difference between the number of pregnancies with and without pelvic girdle pain (p> 0.05).

The mean interpubic distance was found to be 5.80 ± 1.23 in those without pelvic girdle pain, and 9.53 ± 1.63 in pregnant women with pain. There was a difference between the Interpubic distance values of those with and without pain (p <0.001). Interpubic distance values of those with pain were significantly greater than those without pain (Table 3).

There was a difference between the rates of interpubic distance values of being <6 mm, 6-10 mm and >10 mm in pregnant women with and without pain (p <0.001).

Interpubic distance in 44.7% of the pregnant women included in the study was less than 6 mm, in 44.6% of them was between 6-10 mm and in 7.7% of them was over 10 mm (Table 4).

The rates of interpubic distance values being over 10 mm in pregnant women with pain were significantly higher than those without pain, and the rates being below 6 mm were significantly lower (Table 5).

There was no correlation between interpubic distance (mm) values and age and pregnancy numbers (p>0.05).

A positive correlation was found between the Interpubic distance values of the pregnant women and the weeks of gestation (r = 0.427 p <0.001). As the week of gestation increases, the Interpubic distance values also increase (Table 6).

Table 3. Comparison of pregnant women with pelvic girdle pain and without pelvic girdle pain					
Pelvic Girdle Pain	NO (n=234)		YES (n=53)		p
	Mean.±S.D	Median (Min-Max)	Mean.±S.D	Median (Min-Max)	
Age	26.16±5.17	26 (18-39)	26.00±4.34	26 (19-37)	0.952
Gestational Week	23.62±10.05	24 (6-40)	27.15±8.82	28 (8-38)	0.027
Number of Pregnancies	1.65±0.72	2 (1-4)	1.53±0.67	1 (1-4)	0.270
Interpubic distance	5.80±1.23	5.8 (3-12.7)	9.53±1.63	9.7 (5.4-12.6)	<0.001

Table 4. Distribution of the rates of interpubicdistance values being <6 mm, 6-10 mm and >10 in pregnant women

	n	%
Interpubic distance		
<6 mm	137	44.7
6-10 mm	128	44.6
>10 mm	22	7.7

Table 5. Comparison of the rates of interpubic distance values of <6 mm, 6-10 mm and >10 in pregnant women with and without pelvic girdle pain

Pelvic Girdle Pain	NO (n=234)		YES (n=53)		p
Interpubik distance	N	%	n	%	
<6 mm	136	58.1	1	1.9	<0.001
6-10 mm	96	41	32	60.4	
>10 mm	2	0.9	20	37.7	

Table 6. Relationship between Interpubic distance values of pregnant women and gestational week, number of pregnancies and age values (correlation)

	Interpubic distance (mm)	
	R	P
Age	-0.037	0.531
Gestational week	0.427	0.000
Number of pregnancies	-0.057	0.338

DISCUSSION

Pelvic girdle pain is a musculoskeletal disease in pregnancy. Analgesics, physiotherapy, pelvic support orthosis, acupuncture can be used in its treatment. Clinical tests are mostly used in the diagnosis phase. Because, imaging methods cannot be used sufficiently for the continuation of healthy pregnancy and protection of fetus health.

In our study, we investigated how effective the USG, which is used routinely in pregnancy follow-up, can be used in the definition of pelvic girdle pain. Therefore, we aimed to detect patients with pelvic girdle pain and having enlargement of the interpubic distance on USG imaging. In patients applying for pregnancy control, after routine examinations, interpubic distance was measured with USG, pain complaints were questioned, and the diagnosis of pelvic girdle pain was clarified by an Orthopedics and Traumatology specialist.

Among the mechanisms of occurrence of pelvic girdle pain, relaxation in the pelvic joints caused by the relaxin hormone secreted during pregnancy is shown as the main reason in most studies[12,13]. We thought that in patients with pelvic girdle pain, the interpubic distance due to relaxation in the symphyseal joint can be measured as wider. Previously, Björklund et al.[14] have found that pelvic girdle pain and symphyseal distension were significantly associated in their study in 2000. In their study conducted in 2001, Schollner et al.[15] has determined the mean interpubic distance as 4mm in non-pregnant patients, 6.3mm in pregnant women without symphyseal pain and 9.5mm and more in pregnant women with symptomatic symphyseal pain.

In our study, interpubic distance was measured by ultrasound in all patients who applied for routine pregnancy follow-up, and the diagnosis of pelvic girdle pain in patients who described pain was clarified by clinical tests. 18.5% of the patients included in the study had pelvic girdle pain. When the literature was searched, it was observed that this rate was in line with the mean and this shows that the selected clinical tests are appropriate. The interpubic distance was less than 6mm in only 1.9% of patients with pelvic girdle pain. The interpubic distance was greater than 10 mm in only 0.9% of the patients without pain. In our study, we did not find a significant relationship between the number of pregnancies and the interpubic distance. We found that as the week of gestation increased, the interpubic distance also increased. Therefore, we think that the width of more than 10 mm in patients without pain is due to the advanced gestational week. This thought is also supported by the study conducted by Bahlmann et al.[16] in 1993, since they detect of 3mm physiological enlargement in the interpubic distance during normal pregnancy. The interpubic distance measurement was above 10 mm in 37.7% of the patients with pelvic girdle pain. The

interpubic distance was between 6-10mm in 60.4% of patients with pelvic girdle pain. The fact that the number of cases in our study is high by looking at the studies on pelvic girdle pain and symphyseal joint enlargement makes it worthwhile. In addition, the evaluation of each of the USG measurements and clinical tests by the same practitioners to all patients provided standardization. However, we believe that when evaluating the symphyseal joint in pelvic girdle pain, in addition to the width of the interpubic joint distance, the evaluation by elastography in order to detect joint degeneration will contribute.

It was observed that patients with pelvic girdle pain had a significant widening in interpubic distance measurements. We observed a regression in complaints in patients with pelvic girdle pain when conservative treatment such as pelvic belt was applied. Therefore, we believe that measuring interpubic distance with ultrasound is useful in the diagnosis of pelvic girdle pain.

In our study, the relationship between pelvic girdle pain and increased interpubic distance width in ultrasound measurement was found to be significant. Thus, we believe that measuring interpubic distance with USG accompanied by clinical tests will help in the diagnosis of pelvic girdle pain. Clarification of the diagnosis of pelvic girdle pain will enable more accurate treatment selection for the patient and will prevent a decrease in workforce and quality of life.

DECLARATION

The authors warrant that they do not have any financial and personal relationships with other people, or organizations, that could in appropriately influence (bias) this study. And no conflict of interest.

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