



## ARAŞTIRMAMAKALESİ/ORIGINALRESEARCH

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### Migren ve Gerilim Tipi Baş Ağrılarının Gebelik Sürecinde Değerlendirilmesi

### Evaluation of the Course of Migraine and Tension-Type Headaches During Pregnancy

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#### ÖZET

**GİRİŞ ve AMAÇ:** Migren (M) ve gerilim tipi baş ağrıları (TTH), tüm popülasyonda görülen en yaygın baş ağrılarıdır. Bu baş ağrıları hormonal değişikliklerden etkilenebilir ve her yaşta başlayabilir, ancak bu baş ağrılarının sıklığı ve davranışı hamilelik sırasında değişmektedir.

**YÖNTEM ve GEREÇLER:** Bu çalışmada gebelikte M ve TTH'nin seyri değerlendirilmiştir. Gebelik öncesinde M ve TTH olan 32 gebeye, gebelikleri boyunca 3 ayda bir MIDAS ölçeği ve baş ağrısı anketi kullanılarak, gebelik öncesi dönemleri retrospektif ve gebelik süreçleri de prospektif olarak incelenmiştir.

**BULGULAR:** Aurasız migren (MWOA) grubunda gebelik arttıkça baş ağrısı günlerindeki (HD) azalma istatistiksel olarak anlamlı bulundu. (p: 0,0001). Auralı migren (MWA) grubunda gebelik ve gebelik öncesi dönemler arasında ağrı sıklığı açısından istatistiksel fark bulunmazken (p: 0,516), gebelik haftası arttıkça baş ağrısı atak sayısında azalma gözlemlendi. Gebelik öncesi ve gebelik dönemleri karşılaştırıldığında TTH grubunda istatistiksel olarak fark olmamasına rağmen (p: 0,15) 1. ve 3. trimesterde özellikle 1. trimesterde ağrı sıklığında artış gözlemlendi.

**TARTIŞMA ve SONUÇ:** MWOA grubundaki başağrılı günler gebelik sırasında önemli ölçüde azaldı ve bu azalma istatistiksel ve klinik olarak anlamlıydı. MWA ve TTH gruplarında gebelik öncesi ve gebelik dönemleri arasında baş ağrısı günleri açısından istatistiksel fark yoktu.

**Anahtar Kelimeler:** baş ağrısı, migren, gebelik, gerilim tipi

#### ABSTRACT

**INTRODUCTION:** Migraine (M) and tension-type headaches (TTH) are the most common headaches among the whole population. These headaches can be influenced by hormonal changes and can start at any age, but frequency and the behavior of these headaches may change during pregnancy.

**METHODS:** In this study, the course of M and TTH during pregnancy is evaluated. 32 pregnant woman who have M and TTH before pregnancy are questioned prospectively by using the MIDAS scale and headache questionnaire in each 3 trimesters during pregnancy prospectively and retrospectively for pre-pregnant period.

**RESULTS:** In the migraine without aura (MWOA) group, the decrease in headache days (HD) was found to be statistically significant as pregnancy increased. (p: 0.0001). Although there was no statistical difference in terms of pain frequency between pregnancy and pre-pregnancy periods for the migraine with aura (MWA) group (p: 0.516), a decrease was observed in the number of headache attacks as the gestational week increased. When the pre-pregnancy and pregnancy periods were compared, although there was no statistical difference in the TTH group (p: 0.15), an increase in pain frequency was observed in the 1st and 3rd trimesters, especially in the 1st trimester.

**DISCUSSION AND CONCLUSION:** HDs in the MWOA group decreased significantly during pregnancy and this decrease was statistically and clinically significant. There was no statistical difference in terms of headache days between pre-pregnancy and pregnancy periods in the MWA and TTH groups.

**Keywords:** headache, migraine, pregnancy, tension type

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## INTRODUCTION

Primary headaches such as migraine (M) and tension-type headaches (TTH) are chronic headaches that are common in the population. Four out of 10 women and two out of 10 men suffer from migraine in their lifetime, most of them before the age of 35 (1). The characteristic of migraine is affected by the cyclical fluctuations of sex hormones during the reproductive periods of women, and attacks occur predominantly during menstrual periods. In addition, changes in migraine frequency may occur during pregnancy, breastfeeding and contraceptive use.

TTH is a common form of headache and can occur at any age but is most common in adults. The lifetime prevalence is 69% in men and 88% in women (2). TTH accounts for 26% of headaches during pregnancy. TTH may accompany 62% of migraine patients, but migraine features can be found in most TTH patients. Changes in the character of TTH during pregnancy have not been shown. In TTH patients, remission or improvement in pregnancy was observed at a rate of 28-50%, while worsening was only 5% (2,3).

Studies investigating the effects of hormonal changes in pregnancy for M and TTH are generally retrospective. In this study, we prospectively examined the course of M and TTH during pregnancy.

## MATERIALS AND METHODS

The patients included in this study consisted of patients over the age of 18 who applied to Gazi University Faculty of Medicine, Department of Obstetrics and Gynecology. The inclusion criteria were to be older than 18 years of age, to have a primary headache such as M or TTH before pregnancy, and to have had at least one attack in the last year for the study. Exclusion criteria: patients with secondary headaches, younger than 18 years of age, who were unwilling to participate in the study. Research permission was obtained from the ethics committee of Gazi Medical Faculty with the date of 28 April 2014 and number 242. Written informed consent was obtained from all participants. The patients were divided into three groups: migraine without aura, migraine with aura and tension headache group.

The study evaluated 145 pregnant women who applied to the Obstetrics and Gynecology department. Of these, 53 pregnant women with a chronic primary headache before pregnancy were identified, 21 patients were not included in the study, and finally 32 pregnant women were included.

All patients were evaluated with the headache

questionnaire and the MIDAS (Migraine Disability Assessment Score) scale. All patients were interviewed separately in each trimester and assessed with a headache questionnaire. The following points were investigated with the detailed survey; headache history, frequency and characteristics before pregnancy, demographic data, any accompanying neurological findings, other diseases, analgesic use before and during pregnancy, gynecological history and the relationship between migraine attacks and menstruation, headache course in previous pregnancies.

## Statistical Analysis

The data were evaluated with SPSS 16.0 For Windows statistical package program. Since the data did not show normal distribution, statistical analysis was performed using the k-dependent group non-parametric Friedman test and the non-parametric Wilcoxon test for MIDAS scores.  $p < 0.05$  were accepted as statistically significant values. In addition, the Mann-Whitney U test was used. Statistically significant results are also evaluated for clinical significance.

## RESULTS

Of the 32 chronic headache patients in the study, 18 (56.2%) had migraine without aura (MWOA), 4 (12.5%) migraine without aura (MWA), and 10 (31.2%) TTH. The incidence of migraine without aura and migraine with aura is approximately 5:1 and this ratio is mainly consistent with the literature. Demographic characteristics are listed in Table 1.

The mean gestational age was  $29.5 \pm 7.14$ . While the minimum duration of the headache was one year, the most prolonged duration of the headache was 20 years. The mean duration of headache was  $6.5 \pm 8.9$  years. 14 women (43%) experienced their first full-term pregnancy

While the rate of analgesic use before pregnancy was 68.8% (n:22), it was 31.2% (n:10) during pregnancy. The decrease in analgesic use during pregnancy was determined as 54.4%. In a comparison of the reduction in analgesic use according to subgroups, monthly analgesic use before pregnancy was  $3.5 \pm 3.9$  (tablet/month) in migraine groups,  $1.4 \pm 3$  in pregnancy,  $3 \pm 3.4$  in pre-pregnancy period in TTH group,  $1.4 \pm 2.5$  in pregnancy. There was no significant difference when the decrease in analgesic use during pregnancy was compared between migraine and TTH groups ( $p:0.81$ ).

In 18 (56.2%) of 32 patients, the mean monthly headache days (headache frequency) calculated in each trimester decreased or disappeared completely. While there was no difference in 10 (31.2%) patients, an increase in headache frequency was

observed in 4 (12.6%) patients.

The monthly headache frequency before pregnancy was 3.41 days in the MWOA group, 4.81 in the MWA group and 2.31 in the TTH group. The frequency of MWOA headache in the first trimester was 3, 4.81 for MWA, and 5.36 for TTH. Headache

frequency in the second trimester was 2.07 days for MWOA, 2.06 days for MWA and 2.29 days for TTH. In the third trimester, it was 2.02 days for MWOA, 2.06 days for MWA and 2.59 days for TTH (Table 2).

**Table 1: Demographics of the Patients who Participated in to Study**

Characteristics	MWO (n:18) number (%)	MWA (n:4) number (%)	TTH (n:10) number (%)	Total (n:32) number (%)
Mother ages				
20-29	2(0,06)	0(0)	2(0,06)	4(0,12)
30-34	9(0,28)	2(0,06)	6(0,18)	17(0,53)
≥35	7(0,21)	2(0,06)	2(0,06)	11(0,34)
Headache years (average)	8	5,25	4,3	6,5
History of abortus	2(0,06)	2(0,06)	1(0,03)	5(0,15)
Multiparity	9(0,28)	4(0,13)	5(0,15)	18(0,56)
Smoking	3(0,09)	2(0,06)	2(0,06)	7(0,22)
Alcohol	2(0,06)	0(0)	2(0,06)	4(0,12)
Pre-pregnancy any medical history	7(0,21)	1(0,03)	1(0,03)	9(0,28)
Family headache history	14(0,44)	4(0,12)	6(0,18)	24(0,75)
Analgesic use before pregnancy	14(0,43)	3(0,09)	5(0,15)	22(0,68)
Analgesic use in pregnancy	4(0,12)	3(0,09)	3(0,09)	10(0,31)
IVF	2(0,06)	1(0,03)	1(0,03)	4(0,12)

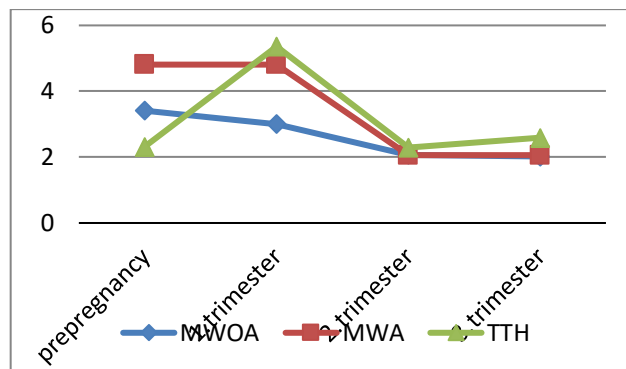
*Abbrevations;MWOA: Migraine without aura, MWA: Migraine with aura, TTH: Tension-type headache, IVF: In vitro fertilisation*

**Table2: The Averages of Headache Frequencies in MWOA,MWA and TTH Groups before Pregnancy and during each Trimesters**

Headache frequencies				
	Pre-pregnancy	1.trimester	2.trimester	3.trimester
MWOA	3,41	3	2,07	2,02
MWA	4,81	4,81	2,06	2,06
TTH	2,31	5,36	2,29	2,59

*Abbrevations;MWOA: Migraine without aura, MWA: Migraine with aura, TTH: Tension-type headache*

A statistically significant difference was found between the pre-pregnancy and pregnancy period of the MWOA group ( $p:0.000$ ). As pregnancy progresses, the decreased pain frequency is especially more prominent in the 1st. and 2nd.trimester,however the reduction has continued throughout 2nd. and 3rd. trimester but the reduction compared to the previous period was decreased. The rate of pain reduction was 12% in the 1st trimester, 39% at the end of the 2nd trimester and 40.7% in the 3rd trimester compared to the pre-pregnancy. As a result, decreases were observed in all trimesters which were significant and clinically significant ( $p:0.000$ ) (Table 2, Figure 1).



**Figure 1: Headache frequencies of MWOA, MWA and TTH before and during pregnancy**

**Abbreviations;MWOA: Migraine without aura, MWA: Migraine with aura, TTH: Tension-type headache**

When pre-pregnancy and pregnancy pain frequencies were compared, no significant difference was found for MWA ( $p:0.516$ ) and TTH ( $p:0.15$ ) (Table 2). Unless a significant difference was not observed in TTH, an increase in the frequency of pain was detected in the 1st and 3rd trimesters, especially in the 3rd trimester.

The statistically significance p value of the MIDAS score was 0.183 in MWOA, 0.655 in MWA and 0.18 in TTH group and statistically significant results were not detected in all groups.

It's observed that the patients who had menstruation-related MWOA before the pre-pregnancy period had higher MIDAS in the 3rd trimester and job with life qualities were more influenced than the others. MIDAS score for this group was  $p: 0.05$  in the 3rd trimester. So, it has menstruation-related MWOA before the pre-pregnancy period will have more disabling headaches during the pregnancy. But rather than this, the following features didn't have any effect on the chronic headaches for pregnancy as; IVF pregnancy, used analgesic number before pregnancy, tobacco-

alcohol use in pregnancy, family headache history, history of abortion

## DISCUSSION

Migraine and tension-type headaches cause a decrease in the quality of life and loss of work force. Migraine (both MWOA and MWA) is more common in women than men, and it is estimated because of female sex hormones (4,5). It is seen at a rate of 4% in puberty and 25% in the reproductive period and decreases in the peri and postmenopausal periods (6). Changes in migraine frequency may also occur during breastfeeding and contraceptive use (7).

Many studies report that headaches during pregnancy vary between 41% and 80% in female migraine patients, or that some of them completely disappear (4,7-9). In their study on 484 pregnant patients with migraine, Chen and Leviton reported that 79% of the patients recovered and 21% did not change (10). In a study with a more selective group, Marcus et al. reported the rate of improvement in headache in pregnancy as 41% (11). In our study, 18 (56.2%) of 32 patients showed a decrease in pain frequency or completely disappeared, no change in pain frequency in 10 patients (31.2%), and an increase in pain frequency in 4 patients (12.6%). Findings were concluded in line with previous literature information.

In the study of Waldmiro Antonio Selva et al., in all periods of pregnancy resulted in a similar decrease in the migraine without aura group, and the decrease between trimesters was found to be significant (12). The results of our study on migraine without aura were consistent with previous literature findings. However, although there was a decrease in the migraine with aura group, the lack of statistically significant difference was attributed to the low number of patients in this group.

Studies investigating the relationship between tension-type headache (TTH) and hormonal changes are limited (13). The results of these studies are inconsistent: While some pointed to similar findings such as migraine, some reported that there was no significant relationship between hormonal changes and TTH (13-15). There are a limited number of studies investigating the relationship between tension-type headache and pregnancy (13). In Karli et al.'s study, it was determined that tension-type headache did not show a statistically significant change during pregnancy (13). In our study, unlike the literature, the change of TTH within all trimesters was evaluated. Due to the extreme values of two patients in the tension-type headache group,

the increase in the mean pain peaked in the first trimester. In the first of these patients, the increase in pain frequency was 10 days/month before pregnancy, 30 days/month in the first trimester, 4 days/month in the second patient, and 12 days/month in the first trimester. When the reason for this increase in the patients was examined, it was seen that both patients got pregnant by in vitro fertilization method, and the second patient had the threat of miscarriage in the first trimester. For these reasons, it has been observed that the patients have intense concerns about miscarriage and pregnancy process, and it is thought that the increase in pain is related to this concern. Similarly, the reason for the increase in the third trimester in the TTH group was that 30% of the patients had problems during pregnancy (syncope, vaginal bleeding, etc.) and some patients had comorbidities such as polyhydramnios. and gestational diabetes. Health concerns and intense stress were seen and increases in the third trimester were thought to be related to these conditions.

Maggioni et al. reported that the use of analgesics during pregnancy decreased and it was used in a limited number (16). In our study, while the use of analgesics before pregnancy was 68.8%, the using rate during pregnancy was 31.2%. The rate of decrease in the use of analgesics during pregnancy was 54.4%. This decrease can also be considered as a decrease in analgesic due to pregnancy, but we think that analgesic reduction is also achieved because of the frequency of pain decreases.

It is known that there is a positive family history in chronic headaches, especially migraine (17-18). Stewart et al. reported that the probability of migraine in first-degree relatives of people with migraine increased significantly compared to the control group, and this increase was especially more pronounced in migraine with aura. They also reported that the age of onset of migraine is earlier (17). In our study, 24 patients had a positive family history, and the family history was 4 in MWA, 14/18 in MWOA, and 6 in TTH. The fact that the family history was high in the MWA group was consistent with previous studies, but its high rate compared to the literature was attributed to the low number of patients.

Our study showed that the MIDAS scores of patients who had menstruation-related MWOA before pregnancy were higher pre-pregnancy and in the third trimester of pregnancy, and their quality of work and life were more affected in both periods. For this reason, it can be interpreted that the rate of loss of function during pregnancy may be higher in those who have menstruation-related MWOA before

pregnancy. Apart from these, any parameter affecting the MIDAS score was not determined.

While the rates of complete recovery from headache attacks were reported between 30-80% in the study groups in the literature (7,19-20). This rate was 43.7% in our study. However, our study is compatible with the literature since the periods of complete recovery in headaches were from the second trimester (5,20).

Our study showed that any of the features such as IVF pregnancy history, the number of analgesics used before pregnancy, smoking-alcohol use during pregnancy, having a family history of headache and a miscarriage did not have a significant effect on chronic headaches during pregnancy.

Some limitations should be addressed while interpreting the results of this study. Due to the limited number of patients, it may not be accurate to generalize the results to the entire population. The lack of statistical difference in the MWA group, the higher family history of MWA, the fluctuations in tension-type headache during pregnancy and their differences from other studies may be due to the small size of the study group.

## CONCLUSION

As a result, in our study, unlike many studies in the literature, the change in migraine and tension-type headaches during pregnancy trimesters was observed. Migraine without aura significantly decreases during pregnancy, and this decrease is statistically and clinically significant. There was no significant difference between pre-pregnancy and pregnancy periods in migraine with aura and TTH pain frequencies.

**Ethics Committee Approval:** Gazi Medical Faculty with the date of 28 April 2014 and number 242.

**Conflict of Interest:** There is no conflict of interest.

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**Informed Consent:** This a retrospective study

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