Does Menstrual Cycle Influence Sensitivity of Sound Tooth?

Menstrual Siklus Sağlıklı Dişin Duyarlığını Etkiler mi?

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ABSTRACT

Objective: In this study, effect of menstrual cycle on healthy pulp sensitivity was investigated.

Materials and methods: Pulpal sensitivity was assessed with electric pulp tester (EPT). The study was performed on 13 dental students without dysmenorrhea (49 teeth). Recordings were taken on four phases of the cycle (menstrual, follicular, luteal, premenstrual).

Results: Statistically, the outcomes were not significantly different across menstrual cycle (p> 0.05).

Conclusion: Menstrual cycle has no impact on pulpal sensitivity of sound teeth as measured by EPT.

ÖZET

Amaç: Bu çalışmada menstrual siklusun sağlıklı pulpa duyarlığına etkisi araştırıldı.

Materyal ve metod: Pulpal duyarlık elektrikli pulp testi ile değerlendirildi. Çalışmaya dismenore olmayan 13 (49 diş) dişhekimliği öğrencisi alındı. Kayıtlar siklusa dört fazda (menstrual, foliküler, luteal, premenstrual) elde edildi.

Bulgular: İstatistiksel olarak test sonuçlarının menstrual siklus boyunca farklılık göstermediği saptandı (p> 0.05).

Sonuç: Sağlıklı dişlerde menstrual siklus EPT ile belirlenen pulpal duyarlığını etkilememektedir.

KEYWORDS

Dental pulp test, Menstrual cycle, Dental pulp, Tooth

ANAHTAR KELİMELER

Dental pulp testi, Menstrual siklûs, Dental pulp, Diş
INTRODUCTION

Menstrual cyclicity is a major biological process for women during their reproductive years associated with significant changes in hormonal status and behavior. Some women might complain about recurrent hypersensitivity that cannot be explained with other possible causes in a tooth with deep filling. This condition is called menstrual toothache and, it is accepted that the offending tooth is usually slightly inflamed, and the lowered pain threshold becomes symptomatic when the proper environmental conditions prevail. However, we do not know whether sensitivity of sound tooth varies across menstrual cycle. This study aimed to examine the effect of menstrual cycle on healthy pulp sensitivity as measured by electric pulp tester (EPT).

MATERIALS AND METHODS

The study was performed on dental student volunteers. Inclusion criteria were as follows: presence of healthy anterior teeth free from caries, restorations, and symptoms, a history of regular menstrual cycles, no ongoing hormonal treatment, absence of dysmenorrhea (severe pain and/or discomfort during the first days of the menstruation, which cause disability or absence from work), no systemic disease.

Prior to scheduling test sessions, each woman reported the date of her most recent menses and length of her cycle (number of days from the onset of menstruation up to, but not including, the day of onset of the next menstrual period) to calculate the phase during which the experimental session actually occurred. Recordings were taken in menstrual phase (days 1-7), follicular phase (days 8-14), luteal phase (days 15-21), and premenstrual phase (days 22-28). The length of the follicular phase was estimated longer or shorter in subjects with cycles longer or shorter than 28 days respectively. Because follicular phase is known to be more variable in length than the luteal phase.

Pulpal sensitivity measurements were performed with Digitest Digital Pulp Vitality Tester (Parkell Electronics Division, Farmingdale, NY). Digitest Digital Pulp Vitality Tester has a digital display that gives a reading from 0 to 64 corresponding to the stimulus applied. New batteries were placed in the pulp tester at the beginning of the study.

Before starting main measurements of the study, subjects were given an initial training session to familiarize them in making judgments of threshold levels in teeth that meet the inclusion criteria of the study. The teeth in which the subjects perceived the sensation exactly constituted the study group.

The following procedure was applied in all measurements. The rate of electric stimulus increase was adjusted to slow. Recordings were performed in lunchtime to aid in patient concentration. Because, the clinic is generally quiet at this time of the day. Gloves were worn. Subject was asked to hold the ground clip in the hand. Tooth was isolated and dried with gauze. Toothpaste was used as the conducting medium. A standardized form was used to chart the location of probe on the teeth to minimize any error in reproducibility based on probe placement. The tip of the probe was placed in right angle to the tooth surface. The subject was instructed to raise other hand at the moment she first detected a warm, tingling sensation in the tooth being tested. When the subject responded the digital readout number was recorded. Two readings were taken for each teeth and an average recorded. If the two readings were far apart (> ±1) a third test was run, with the average of the two closest readings was accepted.

Effect of menstrual cycle on healthy pulp sensitivity was evaluated with repeated measures analysis of variance.

RESULTS

The length of the menstrual cycles ranged between 26 and 30 days. According to the results obtained in the training phase, one tooth (mandibular canin) was excluded from the study. Even at the highest output the subject reported that she perceived no sensation in the tooth. The radiograph revealed totally obliterated coronal pulp chamber.
The statistical analysis was performed on 49 teeth of 13 subject. The results of all teeth pooled together according to the phases are presented in Table 1. Statistical analysis showed no relation between the cycle phases and the EPT results (P=0.23).

<table>
<thead>
<tr>
<th>Menstrual phase</th>
<th>EPT result (mean± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menstrual</td>
<td>8.8 ±6</td>
</tr>
<tr>
<td>Follicular</td>
<td>8.6±5.6</td>
</tr>
<tr>
<td>Luteal</td>
<td>8.6±6</td>
</tr>
<tr>
<td>Premenstrual</td>
<td>8.3±5.4</td>
</tr>
</tbody>
</table>

**DISCUSSION**

In the present study we have preferred to analyze the data on tooth instead of subject basis. Because; clinically each tooth shows individual response to EPT.

In animal and human studies on other parts of the body it is shown that the reactivity of A-fibers decreases during pregnancy but does not vary across menstrual cycle. The effect of pregnancy on nerve fiber conduction is attributed to increased blood progesterone. On the other hand, it is suggested that the concentration of progesterone does not increase enough to influence nerve conduction, and there is not enough time to cause physiological changes in menstrual cycle. Similarly, present study has shown that the results of EPT which denote the perception threshold of the intradental A-fibers do not change throughout the cycle. However the rule seems not to prevail in tooth with inflamed pulp. Anyway, it is known that inflammation can alter the mechanism of dentinal sensitivity.

The subjects of the present study were nondysmenorrheic. Perception mechanism of pulp during menstrual cycle might be different in dysmenorrheic women, because it has been shown that dysmenorrheic women differ from nondysmenorrheic women in perception and response to external stimuli.

Teeth with heavy areas of sclerotic dentin are usually nonresponsive to EPT. This is the reason why we expelled one tooth from the main study.

**REFERENCES**


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