

Evaluation of Pain and Anxiety Levels Related to Diagnostic Punch Biopsy in Dermatology Outpatients: A Pilot Study

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Authors' contributions

This work was carried out in collaboration among all authors. Authors ND and NSD designed the study and wrote the protocol. Author ND did the literature search and also wrote the first draft of the manuscript. Authors ND, SDK and PÖ collected the data. All authors read and approved the final manuscript.

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ABSTRACT

Aim: Literature data on the anxiety levels and pain perception during punch biopsy are lacking. Thus, the aim of the present study is to evaluate the anxiety levels and pain perception during punch biopsy.

Study Design: This is a prospective, single-center pilot study conducted with the approval of the institutional review board.

Place and Duration of Study: Department of Dermatology, Afyon Kocatepe University, between May 2015 and June 2015.

Methodology: This study included 40 dermatology outpatients underwent a punch biopsy. Demographic data, biopsy site, and previous history of any interventional procedure were noted. Pre- and post-procedural anxiety levels were assessed using the State-Trait Anxiety Inventory-1,

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and perception about pre-procedural waiting period and pain perception during biopsy were assessed via 10-point visual analog scales. Furthermore, the association between anxiety and pain levels, and perceived waiting periods were investigated.

Results: In all, 60% of the patients were female (mean age: 43.3±16.3 years). The mean pre-procedural anxiety score was 41.3±10.1. The mean pain score was 3.45±2.8. Pain scores did not correlate with pre-procedural anxiety scores ($P = 0.104$). However, pre-procedural waiting period scores correlated positively with pre-procedural anxiety level ($P = 0.028$) and pain scores ($P < 0.001$).

Conclusions: The punch biopsy was associated with some pain and anxiety. And the perceived waiting period affected pain and anxiety level. Thus, shortening pre-procedural waiting periods may help in relieving pain and anxiety.

Keywords: Anxiety; pain; biopsy; skin; dermatology.

1. INTRODUCTION

Punch biopsy is a widely used diagnostic procedure, and although it's commonly considered to be a comfortable and painless method, literature studies investigating anxiety and pain levels during punch biopsy are lacking. There are several previous reports about correlation between pre-procedural waiting periods, anxiety levels and pain perception during some interventional procedures [1-5]. Thus, the present study aimed to investigate whether there is a correlation between pre-procedural waiting periods, anxiety level, and pain perception during punch biopsy in dermatology outpatients.

2. MATERIALS AND METHODS

This was a prospective, single-center study conducted with the approval of the institutional review board (Ethics Committee approval number is 2015/08-217). In total, 40 dermatology outpatients who underwent punch biopsy for the diagnosis of skin lesions were enrolled in the study. Demographic data, biopsy site, and previous history of any interventional procedure were recorded. The biopsies of all patients were performed on the same day of the biopsy recommendation, after a waiting period ranging from 30 minutes to 3 hours in the hospital. The patients were informed about the biopsy procedure and potential complications, and provided informed consent. The biopsy procedure, biopsy room, equipment used (4 mm punch), biopsy depth (epidermis, dermis and superficial subcutaneous tissue were removed), physician performing the biopsy, type and dosage of local anesthetic (2-mL syringe filled with 2 percent lidocaine with epinephrine and a 30-gauge needle) and waiting time after local anesthesia (7 minutes) were same for each

participant. The biopsy site was categorized as follows: extremity, trunk, and head and neck region. The patients were asked to complete pre-procedural questionnaire and post-procedural questionnaire. The pre-procedural and post-procedural state anxiety levels were assessed by State-Trait Anxiety Inventory Scale-1 (STAI-1). Post-procedural questionnaire additionally included 10-point visual analog scales (VAS) for pain perception and perception about pre-procedural waiting period ranging from 0 (no pain) to 10 (severest pain), and 0 (shortest waiting period) to 10 (longest waiting period), respectively.

STAI-1 is a validated scoring system designed for clinical assessment of state anxiety [6].

It takes into account current state of anxiety, asking how respondents feel at the moment. In total, 20 statements (10 anxiety-positive, 10 anxiety-negative statements) are graded as follows: 1) not at all, 2) somewhat, 3) moderately so, and 4) very much so [6]. Scoring is reversed for anxiety-absent items. Total sum of the grades for each statement constitutes the total state anxiety score, which ranges from 20 to 80, and the higher score indicating greater anxiety [6]. In the present study, cut-off points for state anxiety scores were categorized as follows: ≤ 35 : no anxiety; 36-41: moderate anxiety; ≥ 42 : severe anxiety as previously described [1].

Statistical analyses were performed using SPSS v.18.0 for Windows (SPSS Inc., Chicago, IL, USA). Continuous variables were presented as mean \pm standard deviation, and categorical variables as frequencies and percentages. The chi-square test was used to determine associations between categorical variables. Differences between pre-, and post-procedural anxiety were determined using the Wilcoxon

signed-rank test. Differences between male and females were determined using the independent-samples T test, and differences between patients with no, moderate, and severe anxieties were determined using the one way ANOVA test. Correlations between anxiety level, pre-procedural waiting period, and pain perception scores, were evaluated by the Pearson correlation test, and nonparametric correlations were determined using the Spearman correlation test. The level of statistical significance was set at $P < 0.05$.

3. RESULTS

Among the 40 adult patients, 24 (60%) were female and 16 (40%) were male. Mean age of the patients was 43.3 ± 16.3 years (range: 18-74 years; median: 41.5 years). Most common biopsy site was the trunk (42.5%), followed by extremity (35%), and head and neck region (22.5%). Mean pre-procedural state anxiety score was 41.3 ± 10.1 , and 11 (27.5%), 7 (17.5%), and 22 (55%) patients had no, moderate, and severe pre-procedural anxiety, respectively. Mean post-procedural anxiety level was 37.7 ± 8.7 , and significantly lower than mean pre-procedural score ($P = 0.019$). Mean pain score was 3.45 ± 2.8 (median pain score: 3.5).

Furthermore, mean pre- and post-procedural anxiety, pain score, and waiting period score were similar in the male and female patients ($P = 0.092$, 0.712, and 0.196, respectively).

Pain scores did not correlate with pre-procedural anxiety scores ($r = 0.261$, $P = 0.104$). Although, pain scores of patients with severe anxiety were higher than that of patients with moderate and no anxiety, this difference did not reach to the significance level ($P = 0.623$). In addition, pain scores were not associated with age ($P = 0.582$), sex ($P = 0.196$), biopsy site ($P = 0.808$), and previous history of interventional procedure ($P = 0.879$). However, pre-procedural waiting period scores correlated positively with pre-procedural anxiety level and pain scores ($r = 0.348$, $P = 0.028$, and $r = 0.633$, $P < 0.001$, respectively) (Fig. 1).

4. DISCUSSION

Punch biopsy is a relatively easy and quick method compared to other interventional biopsy procedures, including excisional biopsy [7]. Commonly, it is considered to be a comfortable

and painless method. The present study evaluated anxiety and pain levels during punch biopsy. And the study findings showed that punch biopsy was associated with increased pre-procedural anxiety which decreased significantly after biopsy. Furthermore, mean VAS score of pain in the present study was 3.45 ± 2.8 (median VAS score was 3.5). Although classification of the VAS scores of pain as mild, moderate, or severe in clinical practice is still controversial, various studies have used several cut off points to interpret the scores. In addition, in most of these studies, scoring < 3.5 -5 were accepted as mild pain [8-12]. With these evidences, we may suggest that punch biopsy causes mild/moderate pain. This pain is usually caused by insertion of a needle during the injection of a local anesthetic. Several factors such as physician performing biopsy, punch size, biopsy depth, type and dosage of local anesthetic and waiting time after local anesthesia may affect pain intensity, however in the present study these factors were same for each patient.

The present study also showed that perceived pain and anxiety levels during punch biopsy was significantly associated with perceived pre-procedural waiting periods. In other words, patients who thought that they waited longer before biopsy had higher levels of pre-procedural anxiety and pain during biopsy. Thus, we suggest that shortening the waiting periods in hospital before punch biopsy, may help in relieving pain and anxiety, and may have positive effects on patient tolerance.

Furthermore, in the present study, although the pain scores of patients with severe anxiety were higher than that of patients with moderate or no anxiety, this could not reach a statistically significant level. So, we suggest that pain perception during punch biopsy was not significantly affected by pre-procedural anxiety levels. In addition, the pain perception during punch biopsy was not affected by sex, biopsy site, and previous interventions. However, the relatively limited number of patients in our study is a potential drawback. In addition, various different factors with potential affect on pain perception, such as recent drug usage, food ingredients, and additional physical and emotional stress factors were not assessed. Nevertheless, the present study may be accepted as a pilot study, and the study findings need to be clarified with larger prospective studies.

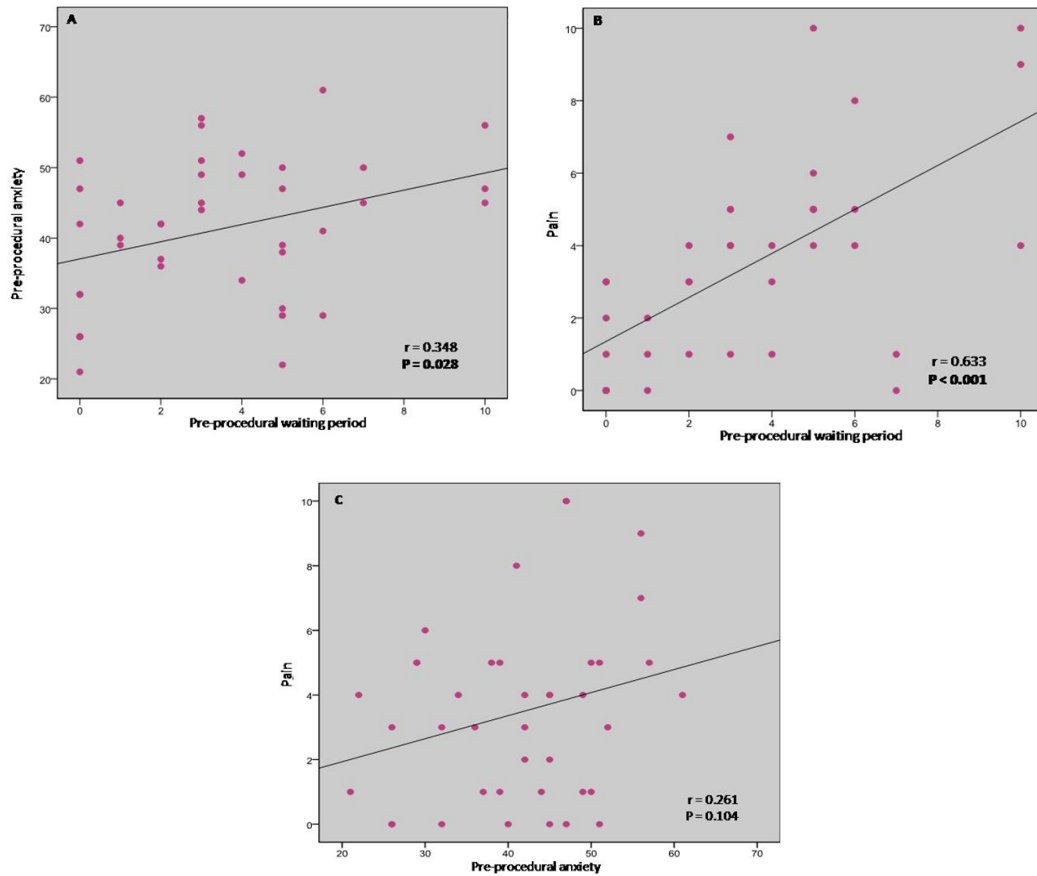


Fig. 1. Graphs showing significant correlations between pre-procedural waiting period scores and pre-procedural anxiety/pain scores (A, B) and non-significant correlation between pain and pre-procedural anxiety scores (C)

5. CONCLUSION

In conclusion, although it is a minimally invasive procedure, punch biopsy can lead to some emotional and physical stress to the patient, and shortening pre-procedural waiting periods in the hospital may help in relieving pain and anxiety, and increasing patient tolerance.

ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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