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ORIGINAL ARTICLE

Comparison of Ibuprofen and Dexamethasone Premedication on Inferior Dental Nerve Block in Irreversible Pulpitis

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ABSTRACT

Aim: To compare premedication with dexamethasone as compared to ibuprofen in the effectiveness of IDNB in lower molars with asymptomatic irreversible pulpal infection.
Study design: A Randomized Control Clinical Trial.
Place & duration: Department of Operative Dentistry, Akhtar Saeed Medical and Dental College, Lahore, from October 2022 to November 2022
Methodology: A total of 30 cases in each group were taken, using an expected success rate of Dexamethasone group and Ibuprofen group 38.2% and 78% respectively, taking 5% level of significance 80% power of study. Therefore, sixty endodontic subjects were taken and divided into two equal groups of thirty patients each, group 1 was given 0.5 mg dexamethasone and group 2, was given 400 mg ibuprofen as pre-medication prior to endodontic therapy.
Results: The results showed mean pain scores 24.38±15.41 in group 1 and 35.63±18.74 in group 2 (P<0.05). According to pain score, 11 patients (36.7%) have pain score between 0.0-20 (successful) and 21 patients (63.3%) has pain score 21.0-100.0 (unsuccessful) in group 1 with mean±standard deviation of 24.38±15.41. While in group 2, 5 patients (16.7%) have pain score 0.0-20 and 25 patients (83.3%) have pain score 21.0-100.0 with mean±standard deviation of 35.63±18.74.
Conclusion: The premedication with dexamethasone as compared to ibuprofen, increased the effectiveness of inferior dental nerve block in lower molars with asymptomatic irreversible pulpitis.
Keywords: IDNB, Irreversible pulpitis, Nerve block, Endodontics.

INTRODUCTION

The pain control is mandatory before start of any dental treatment especially before endodontic treatment[1]. Dental pain is the most common cause of pain and anxiety in the head and neck region[2].

The main significance of clinical endodontics treatment is to manage dental pulps and root canal system for retention of their natural state in function and esthetics[3]. Successful management of painful endodontic treatment, in cases of irreversible pulpal infection, is quite challenging for a dentist[4].

Local anesthesia is actually loss of localized sensations without actual or total loss of overall consciousness[5]. In dentistry, lidocaine (or Lignocaine) is one of the most commonly utilized and administered anesthetic agent[6].

The rationale of this study is to compare effectiveness of Dexamethasone and Ibuprofen in patients with asymptomatic pulpal infection. Studies have shown that geographical variations exist in the anatomy of the nervous system and we are anticipating different results based on geographical variations[7-10]. The significance of this study is that comparison of effectiveness of Dexamethasone and Ibuprofen in patients with asymptomatic pulpal infection will help in effective pain control before doing endodontic treatment of lower molars. In literature there is a gap that effectiveness of Dexamethasone and Ibuprofen in patients with asymptomatic pulpal infection is not known in Pakistani population.

Therefore, the aim was to compare premedication with dexamethasone as compared to ibuprofen in the effectiveness of IDNB in lower molars with asymptomatic irreversible pulpal infection.

METHODOLOGY

This randomized clinical trial was conducted on Pakistani population of Lahore region at department of Operative Dentistry, Akhtar Saeed Medical and Dental College, Lahore after taking informed consent from patients and ethics approval from institute.

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A total of 30 cases in each group were taken, using an expected success rate of Dexamethasone group and Ibuprofen group 38.2% and 78% respectively, taking 5% level of significance 80% power of study.

Sixty subjects fulfilling the inclusion criteria were selected on the basis of coin toss method performed by another endodontic resident, from the operative Department. The following patients were excluded: Patients on chronic medications, patients having systemic diseases and patients with surgical treatment in the last 8 weeks.

A sixty endodontic subjects were taken and divided into two equal groups of thirty patients each, group 1 was given 0.5 mg dexamethasone and group 2, was given 400mg ibuprofen as pre-medication prior to endodontic therapy. The blinding and randomization was done. These medications were given one hour prior to IDNB injections. After ensuring success and effectiveness of IDNB the electric pulp test was done and this was followed by access cavity preparation.

The data regarding effectiveness of Dexamethasone and Ibuprofen was collected and presented in for of frequency distribution and percentages. For data analysis chi square test was applied using SPSS version 20.0 to compare the analgesic effect of Dexamethasone and Ibuprofen.

RESULTS

The mean ages in group 1 were 28.40±5.14 years and 26.73±5.69 years in group 2. The majority of patients were in the age range of 26-32 years, 14(46.6%) patients used dexamethasone and 14 patients (46.6%) in group 18-25 years used ibuprofen also (Table 1).

According to pain score, 11 patients (36.7%) have pain score between 0.0-20 (successful) and 21 patients (63.3%) has pain score 21.0-100 (unsuccessful) in group 1 with mean± standard deviation of 24.38±15.41. While in group 2, 5 patients (16.7%) have pain score 0.0-20 and 25 patients (83.3%) have pain score 21.0-100.0 with mean ± standard deviation of 35.63±18.74 (Table 2).

When compare the success rate, 11 patients (36.6%) have successful and 19 patients (63.4%) have unsuccessful in group 1,

while in group 2, 5 patients (16.7%) have successful and 25 patients (83.3%) unsuccessful rates. When compared the analgesic effect of dexamethasone and ibuprofen, statistically the difference is significant (P<0.05) [Table 3).

Table 1: Age distribution (n = 60)

Age (Years)	Group 1	Group 2
18 – 25	8(26.7%)	14(46.6%)
26 – 32	14(46.6%)	10(33.4%)
33 – 40	8(26.7%)	6(20.0%)
Mean±SD	28.40±5.14	26.73±5.69

Table 2: Frequency and percentage of pain score (n = 60)

Pain score	Group 1	Group 2
0.0 – 20.0	11(36.7%)	5(16.7%)
21.0 – 100	21(63.3%)	25(83.3%)
Mean±SD	24.38±15.41	35.63±18.74

Table 3: Frequency and percentage of success rate in both groups (n = 60)

Success rate	Group 1	Group 2
Successful	11(36.7%)	5(16.7%)
Unsuccessful	19(63.3%)	25(83.3%)

$\square^2$ = 3.06, df = 1, P =0.052

DISCUSSION

The aim of current research was to compare the effectiveness of Dexamethasone and Ibuprofen in selected subjects with asymptomatic pulpal infection.Studies have shown varied pain control effects of different available medications in subjects with asymptomatic pulpal infection[11-17]. The ibuprofen was used in 400 mg dose while dexamethasone was used in 0.5 mg dose, these doses are in contrast with the previous studies[18,19].

Parirokh et al[19] showed high success of Ibuprofen in IDNB in selected endodontic patients with pulpal infection, however he used 600mg ibuprofen which showed high success rate of Ibuprofen in selected subjects with asymptomatic pulpal infection. The findings of Parirokh et al[19] are in contrast with the findings of this study which showed low success rate of Ibuprofen in IDNB in selected subjects with asymptomatic pulpal infection, however in the present study we used 400 mg ibuprofen which showed low success rate of Ibuprofen in IDNB in selected subjects with asymptomatic pulpal infection. So the difference between the findings of 2 studies can be attributed to the dose differences.

Modaresi et al[20] showed high success rate of Ibuprofen in IDNB in selected subjects with pulpal infection, however he used different dose ibuprofen which showed high success rate of Ibuprofen in IDNB in selected subjects with pulpal infection. The findings of Modaresi et al[20] are in contrast with the findings of this study which showed low success rate of Ibuprofen in IDNB in selected subjects with pulpal infection. The difference between the findings of 2 studies can be linked with differences in study design and methodology of two researches.

The result of the recent stud by Kumar et al in 2021 showed that preoperative injection of combing dexamethasone and ibuprofen significantly improved the effectiveness of IDNB in selected subjects with pulpal infection while ibuprofen alone did not significantly improve the effectiveness of IDNB[8]. Similarly, the result of study by Elnaghy et al, in 2022 showed that preoperative injection of tramadol 100 mg significantly improved the effectiveness of IDNB in 62% subjects with pulpal infection while ibuprofen alone did not significantly improve the effectiveness of IDNB[9].

Within the limitations of this study, results showed that dexamethasone causes increased effectiveness of inferior dental block in lower molars with asymptomatic pulpal infection.

CONCLUSION

It was concluded premedication with dexamethasone as compared to ibuprofen, increased the effectiveness of inferior dental nerve block in lower molars with asymptomatic irreversible pulpitis.

Author's contribution: DS, AH& DSI: Concept & design of study, **KA,KM & WA:** Data Analysis, **DS, DS:** Revisiting Critically: **DS:** Final approval of version

Conflict of interest: The study has no conflict of interest to declare by any author.

Recommendation: The patients having asymptomatic irreversible pulpitis of lower first molars should be premediated with dexamethasone to increase the effectiveness of inferior dental nerve block injections while endodontic therapy.

Conflicts of interest: None

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Ethical Approval: Institutional ethical approval obtained.

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