

EFFECTIVENESS OF PREOPERATIVE ALPRAZOLAM WITH IANB IN ANXIOUS PATIENTS OF IRREVERSIBLE PULPITIS

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ABSTRACT

Patients experiencing irreversible inflammation of the dental pulp tend to have a less anesthetic effect of the Inferior alveolar nerve block. Aim of this study was to assess the role of preoperative administration of alprazolam along with inferior alveolar nerve block in patients experiencing permanent damage to the dental pulp. This study included one hundred patients experiencing severe inflammation of the dental pulp involving the mandibular molars and was a potentially randomized double blinded study. 45 minutes prior to administration of the inferior alveolar nerve block the patients were either given 0.5mg of alprazolam or a placebo drug. An interval of 15 minutes was given between the IAN block injection and the initiation of access cavity preparation. Lack of sensation in the lip area was noted for all patients. A visual analogue scale recording was used for every patient to record any stimuli to pain during cavity preparation and initial instrumentation. No or mild response to pain was recorded as a successful outcome. The information was examined using t test and chi square test. The patients given preoperative alprazolam had 52% rate of success. The success rate was 44% (the P value = 0.402), in the control group, showing no statistically significant difference. Giving preoperative 0.5mg alprazolam did not improve the effectiveness of the IAN block in patients with permanent deterioration of the dental pulp.

Key Words: Alprazolam, inferior alveolar nerve block, irreversible pulpitis, anxious patients.

INTRODUCTION

When carrying out root canal treatments, the primary aim of the dentist is to achieve adequate local anesthesia.¹ When treating mandibular molars the standard approach to achieve localized numbness is to administer an inferior alveolar nerve block.²

Psychological factors are one of the most common causes of failure of the IAN block. Anxious patients experiencing severe dental pain tend to have a decreased effect of the anesthesia. Alprazolam, most commonly used to treat agitated patients is an anxiolytic drug belonging to the new generation of^{1,4} benzodiazepines, is also used as an antidepressant and also to tend to patients having nervousness.⁵ The Corah Dental Anxiety Scale is the most frequently used dental anxiety scale and is easy to use.⁶

Many studies have been conducted to refine the failure of inferior alveolar nerve block such as Lindemann and co-authors have deduced the impact of sublingual triazolam and another study using triazolam showed 43% success compared to 57% success with the placebo drug, showing no notable difference (P=.43) between the two groups.⁷ Ehrlich and co-authors concluded that triazolam is safe and superior to diazepam as anxiolytic in patient with endodontic pain.

As the above mentioned studies show, the variability of results in terms of efficacy provides with a strong rationale to conduct this study in our population. A review of literature shows that no local studies have been conducted to evaluate the efficacy of preoperative alprazolam.

The purpose for conducting this research was to determine the efficacy of administering 0.5mg of alprazolam orally before starting the procedure, on the success of inferior alveolar nerve block with 2% lignocaine containing 1:100 000 epinephrine for patient with symptoms of permanent pulpal damage and to provide pain free treatment in anxious patients with irreversible pulpitis.

METHODOLOGY

One hundred patients took part in the study (fifty of which were in alprazolam group and fifty patients in control group). Sample size calculated by WHO

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calculator. Approval was taken from the ethical committee. Risks and benefits were discussed with each patient and a verbal and written consent was obtained from the patient, both in English and Urdu languages. Data were collected by non-probability consecutive sampling technique.

Inclusion Criteria:

- Patients of either sex.
- Patients aged from 18 to 65 years.
- Moderate or severe pain in a first or second mandibular molars, vital mandibular molar teeth asses clinically.
- Patient with moderate anxiety level score > 9.
- Informed consent granted.
- Patient history of spontaneous pain lasts for more than 30 seconds with VAS score 3-6 (moderate pain) or 7-10 (severe pain) after removal of cold stimulus and is confirmed by cold testing.

Exclusion Criteria:

- Pregnant patients.
- Patient allergy to benzodiazepine group of drug.
- History of significant medical problems such as; COPD, sleep apnea, myasthenia gravis.
- Lactating patients.
- Patients with no reaction to cold testing.
- Inability to give informed consent.
- Patients who receive intrapulpal and buccal infiltration with inferior alveolar nerve block.

Preoperative pain scoring by visual analogue scale (VAS) will determine the pain level and preoperative anxiety level by Corah dental anxiety scale will determine the patient anxiety level. The study is double blind study as the patient and investigator are unaware of the given medication. Sealed envelope method technique is used for randomizing the symptomatic irreversible pulpitis patient. Envelopes of same size and colors will be placed in a box by an independent person having labels as A and B along with 0.5mg alprazolam in one envelope and placebo (same color and size of alprazolam) in another envelope. The patient will be asked to pick one envelope and open it show the label to independent person and take the medicine inside the envelope 45 min before giving IANB using 1.8ml of 2% lignocaine containing 1:100 000 epinephrine injected with a metallic syringe. After 15min three steps would be performed to check the IANB success in both groups (1) lip numbness (2) cold test (3) none or mild pain during endodontic access and initial instrumentation.

RESULTS

Out of 100 patients half of them were males and half were females. The age range was 20 to 50 years with an average age range of 30±5 years. There was no notable change between gender, age, preoperative pain level and Corah dental anxiety scale between two groups (P>.05). There was no statistically significant difference in success rate between two groups

(P= .402). It has been analysed that IANB is more effective in mandibular first molars when two groups were compared.

TABLE 1: AGE, GENDER, PREOPERATIVE PAIN SCORE AND CORAH DENTAL ANXIETY SCALE IN ALPRAZOLAM AND PLACEBO GROUP

	Alprazolam	Placebo	P value**
Total subjects	50	50	
Age range	20-50	20-50	.576
Gender			
Female	25		
Male	25		
Preoperative pain level*	4 (20.2)	5 (22.1)	.764
Corah dental anxiety scale	10.2(4.5)	11.5 (4.3)	.137

*Mean (standard deviation) **No significant difference between two classes (P>.05)

TABLE 2 : SUCCESS OF IANB VALUES ANALYSED BY USING CHI SQUARE TEST

	Alprazolam	Placebo
No	24/50 48%	28/50 56%
Yes	26/50 52%	22/50 44%

TABLE 3: IANB SUCCESS IN GROUP AND TOOTH TYPE

Tooth Type	Placebo group(n=50)	Alprazolam Group (N=50)
First Molar	19/40 (47.5%)	21/39 (53.8%)
Second Molar	3/10 (30%)	5/11 (45.4%)

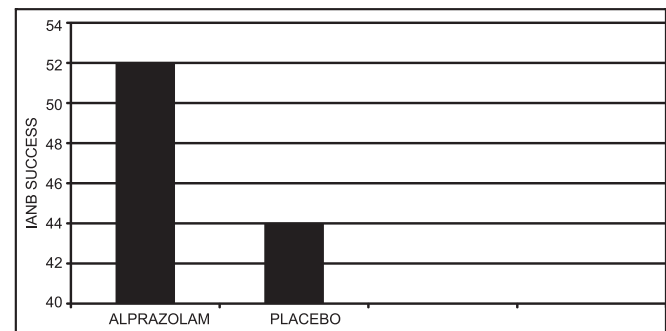


Fig 1: IANB success by group placebo and alprazolam

DISCUSSION

The initial pain and anxiety levels of the patients were not remarkably distinct in both categories of patients, those receiving alprazolam and those receiving the placebo drug. The outcome of this study

is similar to the results of Lindemann et al⁷ in which they stated that 0.25mg of sublingual triazolam could not improve the effectiveness of the inferior alveolar nerve block. It has been previously demonstrated in various unconscious patients studies such as Aissaoui et al⁸, young et al⁹ and Jackson and Johnson¹⁰, that conscious sedation during dental treatment has little or no effect on the pain threshold of the patients. The outcome of this study also correlates to the results of these studies. Minimizing the anxiety levels during endodontic treatment have shown a greater rate of patient satisfaction⁷, however this was not the focus of this study.

With reference to Malamed, it has been stated that the density of the mandible, minimal accessibility of the nerves and anatomical variations are some of the major reasons for failure to achieve successful local anesthesia in up to 20% of IANB injections¹¹. Pre-existing agitation and fear of patients also causes reduced efficacy of the local anesthetic solution, as proved by Milgrom¹². Psychological factors are one of the potential causes of IANB failures in patients who complain of pain even after receiving adequate local anesthetic injections.¹³

The use of benzodiazepines are commonly indicated for patients who have difficulty in achieving adequate local anesthesia due to its wide range of therapeutic index and rapid relieving properties.¹⁴

Various studies such as Oleson and co-authors, Simpson and co-author¹⁶, Noguera-Gonzalez D and co-author¹⁷ have shown an increased success rate of the IANB injections if the patients are administered preoperative analgesics.

CONCLUSION

This study showed negligible change in the potency of the IANB, in patients suffering from acute dental pain due to irreversible pulpitis, after prescribing oral anxiolytics however, it may have a positive effect on reducing the anxiety levels, making the patient and operator more comfortable during the procedures. These results could be re-verified using a larger sample size.

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CONTRIBUTIONS BY AUTHORS

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| 1 Azam Muhammad Aliuddin: | Principal author, design of the study, introduction, discussion and final approval. |
| 2 Saqib Rashid: | Data collection and methodology. |
| 3 Abubakar Sheikh: | Statistics and compiling results. |