Increased effectiveness of IANB by concurrent use of ibuprofen is still not confirmed. Some studies do not support the use of ibuprofen as premedication to enhance the effect of IANB. One reason for the effectiveness could be the use of Lidocaine as an anesthetic agent in all these studies. Lidocaine is less effective when used for inflamed tissues because it has a reduced effect on nociceptors as it poorly blocks both the subtypes' tetrodotoxin-resistant sodium channels i.e. Nav 1.8 and Nav 1.9. In the inflamed tissues, the acidic environment favors the formation of charged ionic form, which prevents the passage of lidocaine molecule through cell membrane (ion trapping), thereby blocking the sodium channels. To overcome this problem, it was suggested that mepivicaine be used instead of lidocaine as it resist ion trapping. Therefore, the purpose of this study was to assess effect of preoperative use of ibuprofen on IANB in patients with irreversible pulpitis as it has shown positive improvements in the effectiveness of IANB in such patients. Increased effectiveness of IANB by concurrent use of ibuprofen is still not confirmed. Some studies do not support the use of ibuprofen as premedication to enhance the effect of IANB. One reason for the effectiveness could be the use of Lidocaine as an anesthetic agent in all these studies. Lidocaine is less effective when used for inflamed tissues because it has a reduced effect on nociceptors as it poorly blocks both the subtypes' tetrodotoxin-resistant sodium channels i.e. Nav 1.8 and Nav 1.9. In the inflamed tissues, the acidic environment favors the formation of charged ionic form, which prevents the passage of lidocaine molecule through cell membrane (ion trapping), thereby blocking the sodium channels. To overcome this problem, it was suggested that mepivicaine be used instead of lidocaine as it resist ion trapping. Therefore, the purpose of this study was to assess effect of preoperative use of ibuprofen on IANB in patients with irreversible pulpitis.
The efficacy of IANB was significantly high in group 1 (ibuprofen group) as compared to group 2 (placebo group) in our study. Previous studies have also demonstrated that ibuprofen given 30-60 minutes preoperatively can suppress a large portion of prostaglandin production, thus improving the IANB efficacy. In our study, Ibuprofen proved 82% effectiveness to improve the success of IANB as compared to placebo which was 36% (p=0.0005).

Patients in group 1 (Ibuprofen group) received 400 mg ibuprofen (Abbott, Pakistan) and patients in group 2 (Placebo Group) received identically appearing gelatin capsules (placebo) 30 minutes prior the administration standard IANB, which was performed using 1.8 ml of 2% mepivacaine (1:100,000 epinephrine). Ten minutes after the administration of IANB, access cavity preparation was started and patient was instructed to rate any discomfort or pain during access and pulp extirpation by using Visual analogue scale (VAS). A VAS was a 10 cm line without calibrations drawn with one extreme negative and one extreme positive end. The patients were instructed to mark one point on the VAS showing his/her current status of pain.

The foremost important step of endodontic treatment is pain control to make the patient relax and for the comfort of the dentist, who is carrying out the treatment. One of the most technically challenging local anesthesia injections is IANB, 85-90% effectiveness in restorative dentistry and 20% effectiveness in cases if irreversible pulpitis. Although local anesthetics are highly effective in producing anesthesia in normal tissues, they commonly fail in patients with inflamed tissues. For instance, IANB is associated with a failure rate of 15% in patients with normal tissue and 44-81% with irreversible pulpitis.

Various reasons cited for the failure are inflamed tissues, decreased tissue pH and sensitization of nociceptors, including transient receptor potential vanilloid type 1 (TRPV1) and tetrodotoxin. Previous studies have suggested that premedication might enhance the effectiveness of the IANB in such cases. The efficacy of IANB was significantly high in group 1 (ibuprofen group) as compared to group 2 (placebo group) in our study. Previous studies have also demonstrated that ibuprofen given 30-60 minutes preoperatively can suppress a large portion of prostaglandin production, thus improving the IANB efficacy. In our study, Ibuprofen proved 82% effectiveness to improve the success of IANB as compared to placebo which was 36% (p=0.0005).

DISCUSSION

Table 1. Descriptive statistics of pain score.

<table>
<thead>
<tr>
<th>Pain Score</th>
<th>Group I</th>
<th>Group II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ± SD</td>
<td>0.77±1.72</td>
<td>3.13±3.04</td>
</tr>
<tr>
<td>Max-Min</td>
<td>6-0</td>
<td>9-0</td>
</tr>
</tbody>
</table>

Table 2. Effect of preoperative ibuprofen.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Group I n=39</th>
<th>Group II n=39</th>
<th>Total</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective</td>
<td>32(82.1%)</td>
<td>14(35.9%)</td>
<td>46(59%)</td>
<td>0.0005</td>
</tr>
<tr>
<td>Not Effective</td>
<td>7(17.9%)</td>
<td>25(64.1%)</td>
<td>32(41%)</td>
<td></td>
</tr>
</tbody>
</table>

RESULTS

Mean age of the patients in group 1 and 2 was 37.03±9.45 and 35.62±9.38, respectively. Male (26%) and female (24%) were in group 1 and 22% and 28% in group 2. Mean pain score was 0.77±1.72 in group-1 and 3.13±3.04 in group 2 (Table 1). Ibuprofen was effective in 82% cases in group 1 and 36% in group 2, which is statistically significant (Table 2).
CONCLUSION

Oral premedication with Ibuprofen given 30 minutes before administration of IANB significantly increased its effectiveness in patients with symptomatic irreversible pulpitis.

REFERENCES