

A Comparative Study of Local Anesthetic Effects of Lignocaine Vs Tramadol in Minor Surgeries

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Abstract:

Background: Postoperative pain is one of the primary targets to relieve as it also affects the clinical outcomes **Aim:** To evaluate and compare the efficacy of Tramadol & Lignocaine during post operative period in terms of analgesia and adverse effect profile in minor Surgeries.

Materials and methods: we conducted a prospective, randomized, single blind, parallel group clinical study to compare the local anesthetic effects of Tramadol to Lignocaine in patients who had undergone minor surgeries. The patients were randomly divided into 2 groups (L and T groups) in ASA physical status. Both the groups were administered by subcutaneous route for swellings less than 5cms in size. Swellings selected were Lipoma, sebaceous cyst and dermoid cyst. L group (n=30) patients were administered 1mg/kg Lignocaine and T-group (n=30) patients were administered 2mg/kg Tramadol. The intensity of post operative pain was assessed by using Visual analog scale at 15min, 30min, 1hour, 2hours, 4hours and 6hours. The results were compared and analyzed statistically.

Results: After 6hours of post operative period, the mean pain scores in L-group is **1.144** and in T-group is **0.904** (P-value=0.336) Adverse effects were observed in **53%** of patients in L-group and **70%** of patients in T-group (P-value= **0.338**) Need for additional analgesic in L-group is **30%** and in T-group is **10%**.(P-value=0.0256)

Conclusion: It can be concluded that there is no significant difference between the two groups in terms of mean pain scores and adverse effect profile. But need for additional analgesic was less and statistically significant in T-group when compared to L-group. Hence Tramadol can be a good choice in minor surgeries less than 5cms.

Keywords: Lignocaine, Minor surgeries, Post operative pain, Tramadol.

I. Introduction

One of the most important concerns of the patients in postoperative period is postoperative pain. Accurate management of pain is one of the important challenges of health care providers.⁽¹⁾ Effective relief of postoperative pain is one of the primary targets as postoperative pain also affects the clinical outcomes of the surgeons. Ineffectively treated and persistent postoperative pain may lead to anxiety, sleep disorders, demoralization, disturbances in mental activity and social relations. Besides, postoperative pain may increase heart rate and blood pressure, suppress immune functions, decrease pulmonary functions, increase the probability of dangerous complications such as myocardial ischemia, deep venous thrombosis, pulmonary embolism, hypoxia, pneumonia, stroke^(1,3) In addition to these severe adverse effects, uncontrollable pain is elated with gastrointestinal adverse effects like vomiting and ileus⁽¹⁾ Uncontrollable acute pain may result in prolonged hospital stay and unplanned hospital admissions and increased hospitalizations besides psychological and physiologic effects.⁽²⁾ In a retrospective study, unplanned re-applications and admissions within postoperative 30 days was estimated as 38% Prolongation of acute pain treatment causes central and peripheral nervous system sensitization and may lead to chronic pain development of which treatment is hard and expenditure is high⁽⁴⁾. Pain was found as one of the three medical problems causing delay in discharge after ambulatory surgery. That an effective postoperative pain management cannot be achieved is a reality and unfortunately satisfaction is low both for the physicians and the patients⁽¹⁾ Even, in a study approximately 80% of the patients were reported to suffer from pain after surgery. Many patients still suffer from pain despite focusing on pain management programs and developing novel postoperative pain management programs⁽³⁾

Several drugs and strategies are available for the control and prevention of post operative pain. During the minor surgeries most commonly used drug is Lignocaine, as a local anesthetic. Since it is a local anesthetic it is effective only during intra operative period and its effect will not continue during post operative period, hence

usage of additional medications are required during post operative period. It has certain adverse effects which limits its usage. It is proved that opioid analgesics are also effective for minor surgeries and can replace lignocaine⁽⁵⁾ The intent of present study is to achieve satisfactory pain control for minor surgeries during intra operative and post operative period using less number of drugs with least possible adverse effects. The study is undertaken by comparing the two drugs lignocaine and tramadol.

II. Materials & Methods

We conducted a Prospective, randomized, single blind clinical study to compare the efficacy and safety of Tramadol to Lignocaine in patients undergoing minor surgeries for swellings less than 5cms such as lipoma, sebaceous cyst, dermoid cyst in Government general hospital attached to Sri Venkateswara Medical College, Tirupati. The study was conducted after approval by the Scientific Committee and Institutional Ethics Committee, Sri Venkateswara Medical College, Tirupati. Informed consent form was prepared in English and regional language Telugu. Informed consent was taken from the patients after detailed explanation. They were encouraged to ask questions to clarify any doubts. They were also explained the treatment process. History was taken and physical examination was conducted as per the pre-designed case record form. Patient's weight was measured to calculate the dose of the drug to be administered.

Inclusion criteria:

1. Patients in age between 15 to 70 years
2. Patients with swelling less than 5cms
3. Patients who are in ASA physical status grade 1-2

ASA physical status is the physical status graded by American society of anesthesiology. ASA grade I Patients are considered to be normal and healthy. ASA grade II Patients have mild to moderate systemic disease. The injection mixture volumes were increased to 5cc and then were injected by a needle no. 25 to induce local anesthesia by subcutaneous block. The surgical incision was made 5 minutes after the subcutaneous injection of the drug and blood pressure, heart rate, respiratory rate were monitored and registered during the surgery. Patients were divided into two groups consisting of 30 in each.

Group 1 or Lignocaine group consisting of 30 patients:--

Treatment intervention: Administration of Lignocaine 1mg/kg subcutaneously before excision under supervision..

Group 2 or the tramadol group consisting of 30 patients :-

Treatment intervention: Administration of Tramadol 2mg/kg subcutaneously before excision under supervision. The amount of pain was measured and documented via VAS -Visual Analogue Scale at 15 minutes, 30 minutes, 1hour and after that, every 2 hours until 6 hours past the operation.

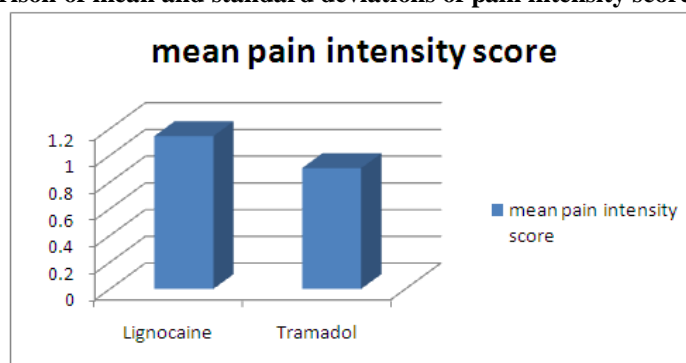
Postoperatively after 15min, 30min 1, 2, 4, and 6 hours the two groups did not have any significant difference in the pain scores. This means that the anesthesia induced by tramadol is as efficient as that of lignocaine

III. Results

Table 1: Comparison of mean and standard deviations of pain intensity scores in two groups

Medicine	No of subjects	Mean	Standard deviation	Mean deviation
Lignocaine	30	1.144	1.108	0.24
Tramadol	30	0.904	0.77	

Fig 1: Comparison of mean and standard deviations of pain intensity scores in two groups

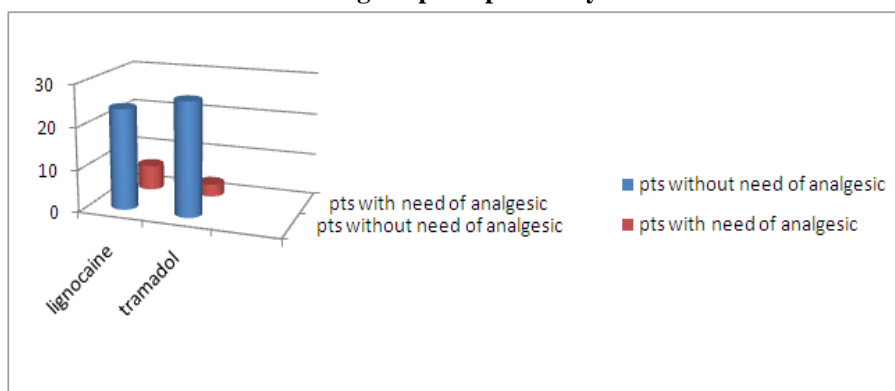


P value =0.336. This indicates that there is no significant difference between the two groups in mean pain scores.

Table 2: Number and frequency of patients in Lignocaine and Tramadol groups in need of additional analgesic post operatively.

		Without a need of additional analgesic	With a need of additional analgesic
Lignocaine group	Number	24	6
	Percentage	80%	20%
Tramadol group	Number	27	3
	Percentage	90%	10%
Total	Number	51	9
	Percentage	85%	15%

Fig 2: Number and frequency of patients in Lignocaine and Tramadol groups in need of additional analgesic post operatively.



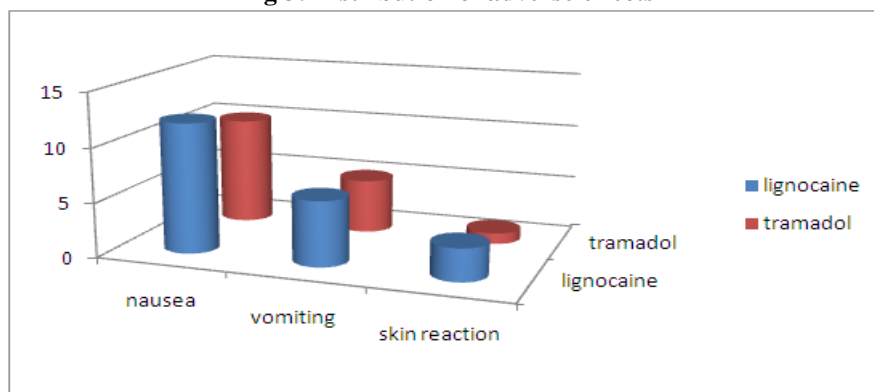
Need of any additional dose of analgesic for relief of pain in post operative period. After the operation, acetaminophen (paracetamol) 500 mg tablets were prescribed if the patient is needed. The patients were discharged on the same day of operation.

When comparing the need for additional analgesic by the patients after the operation, 20 % of the subjects in Group L and 10 % of the subjects in Group T needed an additional analgesic making no significant difference between the two groups.

Table 3: Distribution of adverse effects

	Lignocaine group (n=30)	Tramadol group (n=30)
Nausea	12	10
Vomiting	6	5
Skin reactions	3	1

Fig 3: Distribution of adverse effects



Monitoring adverse drug reactions if any like nausea, vomiting and skin reactions in post operative period. Incidence of nausea, vomiting, skin reaction on a scale of 0-3 were evaluated. [0: without reaction, 1:mild rash, 2:erythema, 3:wheals]

IV. Discussion

In this study, subcutaneous injection of tramadol led to local anesthetic effects similar to those of lidocaine. Such a result was also achieved in similar studies conducted by Altunkaya H et al in Turkey, where they compared tramadol with prilocaine and lidocaine. In our study, tramadol resulted in longer duration of analgesia, reducing the need for analgesics after the operation, which is in accordance with the results of Altunkaya's study^(11,12). Moreover, tramadol extended the pain-free period after operation and significantly decreased the need for postoperative analgesia.

At first, tramadol was thought to apply its analgesic effects through spinal and supraspinal pathways, but several clinical studies showed that tramadol can also have local anesthetic function

In the **Table-2** the number and frequency of patients requiring additional analgesic in post operative period showed significant difference between Lignocaine and Tramadol groups. (P-value=0.0256) In our study, the total paracetamol used in Tramadol group was lesser than Lignocaine group, which is in accordance with Altunkaya's study^(11,12).

There was no difference between the two groups in terms of blood pressure, heart rate and respiratory rate; these results are comparable to those of studies where Tramadol was injected in intramuscular or intravenous approaches or when it was used in patient controlled analgesia method or in subcutaneous form.

Nausea and vomiting are among the more important complications of Tramadol when it is used to control pain after the operation. The prevalence of these complications seem to depend on the serum concentration peak of the drug; for instance, these symptoms are more evident in a 3 mg/kg intravenous dosage of the drug compared to when it is infused or used in patient-controlled analgesia method.

In the **Table-3** the distribution of adverse effects of Lignocaine and Tramadol showed P-value-0.338. The incidence of adverse effects like nausea, vomiting, skin reactions showed no significant difference between Tramadol group and Lignocaine group.

Finally, we evaluated the anesthetic and analgesic effects of subcutaneous Tramadol after the operation. So it can be concluded that Tramadol can be a good choice in minor surgeries for excision of benign swellings less than 5cms.

V. Conclusion

Both the drugs were safe. The incidence of adverse effects like nausea, vomiting, skin reactions were low in Tramadol group when compared to Lignocaine group.

Treatment with Tramadol may be justified in patients despite its higher cost due to better efficacy rate, ensured compliance with treatment, thereby reducing the post-operative pain

Tramadol is a suitable and acceptable alternative to lignocaine as a local anesthetic in reducing post operative pain in minor surgeries because of its prolonged sustained effects and lesser need for the postoperative analgesic requirement and is recommended as a local anesthetic in minor surgeries.

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