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An Overview on Anti-Inflammatory Transdermal Patches

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Abstract: ***The study has been used to provide information regarding the use of anti-inflammatory transdermal patches. The degree of postoperative analgesic frequency of adverse events and patient compliance has been compared with transdermal diclofenac patches and tablets. The transdermal system has been considered as the innovative delivery method used for providing relief in various pain. In this study, diclofenac has been used in both oral and transdermal forms.***

Keywords: anti-inflammatory, transdermal patches, diclofenac, oral and tablets

1. Introduction

The study helps to get knowledge regarding anti-inflammatory transdermal patches that are used for the treatment of rheumatoid arthritis (RA). DSC and FTIR have been used in this study to understand the formation of various amines and salt of diclofenac. In recent years Transdermal patches have been discovered as an innovative topical delivery system for NSAIDs and diclofenac. Anti-inflammatory transdermal patches provide advantages of sustained drug delivery. In this study, we have used anti-inflammatory transdermal patches to evaluate the postoperative analgesia, patient tolerability, and adverse events. Anti-inflammatory patches contain nonsteroidal anti-inflammatory drugs which are used for providing relief to pain.

2. Materials and method

In this study, twenty young pre-orthodontic patients were chosen who were suffering from the bilateral maxillary and mandibular. Both female and male patients were involved in the study and they belonged to the age group between 14 to 25 years old. The mean age of the participants was 17.5 years old (Gennari et al.2020). The involved participants possessed good periodontal status and none of them were suffering from tooth decay. Some of the participants were excluded from the samples who were allergic to NSAIDs or suffering from active peptic ulceration within the last four months. The patients who were suffering from epilepsy, bronchial asthma, emotional and psychosomatic disorders, and other NSAIDs were not allowed to participate in the study. The institutionally approved ethical committee provided ethical clearance for the study and the nature of the study was discussed with all the participants.

Regarding the side effects of the drugs being administered was informed to all the participants. As per Nara et al. (2019), all the participants provided written informed consent. Standardized armamentarium has been used to extract the first right maxillary and mandibular in the same appointment. The standardized armamentarium has been used to contain 50 mg oral diclofenac. The patients were allowed to take sodium tablets twice a day for two days. Verbal Pain Intensity and pain relief scores were given to each of the patients and they were provided points from 0 to 4 on the 5-point scale. Pain intensity and pain relief were assessed through verbal pain intensity and pain relief sore for two postoperative days.

Patients were allowed to take Paracetamol 500 mg tablets as rescue meditation and a total of 4 tablets were provided to patients for two days. The number of paracetamol taken by the patients in two days was recorded and allowed to return the tablet on the next visit. After completion of two days, another day was given to the patients for the washout of drug from the patient's body (Musazzi et al.2019). The verbal pain of the patients was recorded and evaluated another day. Diclofenac transdermal patch is considered a matrix-controlled transdermal delivery system. The transdermal delivery system is designed for providing continuous and systematic release of diclofenac at the site of application.100 mg of Diclofenac Diethylamide contains a 50 sq. cm patch.

The polymer matrix consists of the device that is used for the release of the drug. That is used for the prevention of the leaching of drugs from the top. Slow-release of drugs into the body over time is delivered by the patches. The patch was changed on each of the two days. New patches were placed over the postoperative days. On different hairless skin areas, each successive application of the transdermal patches was made. Paracetamol was provided to the patient during the postoperative period. The same operator was used to perform the premolar extraction that helps in removing the operator-induced bias.

3. Result and Discussion

From all the patients duly filled verbal pain intensity and pain relief score charts were collected. Mann-Whitney U nonparametric test was done to collect the store charts (Iwata et al.2020). It has been revealed from the assessment of the pain intensity that pain intensity scores gradually decrease from the first day to the second day with both transdermal patch and oral diclofenac tablets that have been shown in table 1.

Table 1: Variation in the mean intensity from day 1 to day 3

	Oral		Transdermal system	
	Day 1	Day 2	Day 1	Day 2
Mean (n=20)	1.1	0.6	1.2666	0.8332
S. D	1.0939	0.6746	0.7395	0.6987

(Source: created by author)

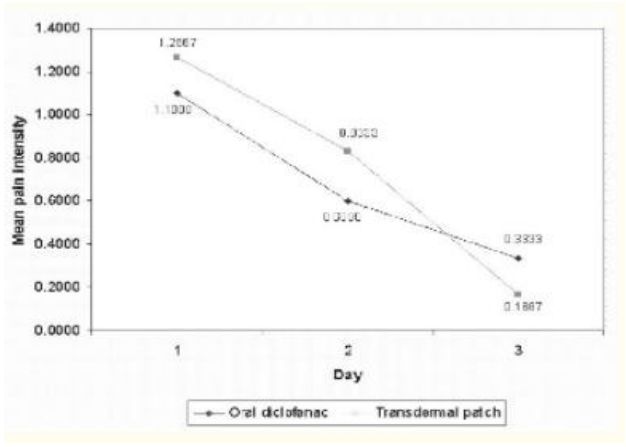

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Figure 1: Variation in the mean intensity from day 1 to day 3
(Source: created by author)

It has been found that all the patients were relieved on the second day with a transdermal diclofenac patch. There was a gradual increment in the pain those were taking oral diclofenac.

Table 2 shows the score on the pain relief scale

Table 2: Score on the point relief scale

	Oral		Transdermal system	
	Day 1	Day 2	Day 1	Day 2
Mean (n=20)	3.0665	3.3665	3.4454	3.7879
S. D	0.9443	0.7741	0.7915	0.876

(Source: created by author)

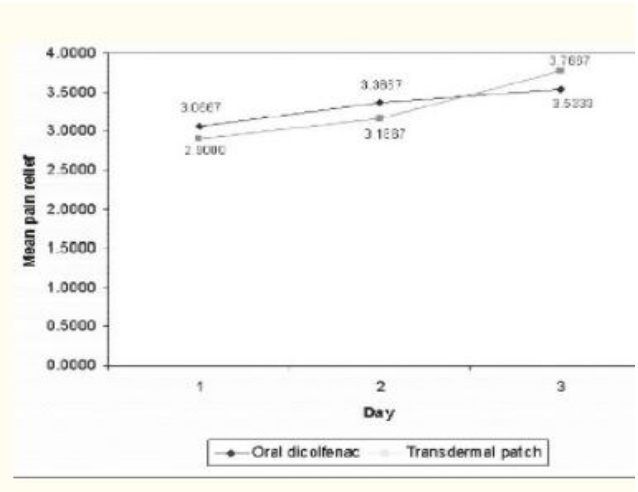

Figure 2: Score on the point relief scale
(Source: created by author)

The statistical analysis has shown the difference between pain intensity and pain relief that has been provided through a transdermal patch that has shown in table 3.

Table 3: The difference between pain intensity and pain relief

	Pain Intensity		Pain relief	
	Day 1	Day 2	Day 1	Day 2
Mann Whitney U	0.9979	1`.2195	0.8473	1.131
P-value	0.316	0.222	0.39	0.256

(Source: created by author)

The difference in the level of pain suffered by the patients shows that the patient who was taken oral diclofenac tablets were got significant pain relief, as well as maximum patients, were got relife who were taken transdermal patch as shown in the table4.

Table 4: Efficacy of the treatment

Treatment	Effective	Not effective	Total
Tablet	9	11	20
Patch	14	8	20
Total	23	17	40

(Source; created by author)

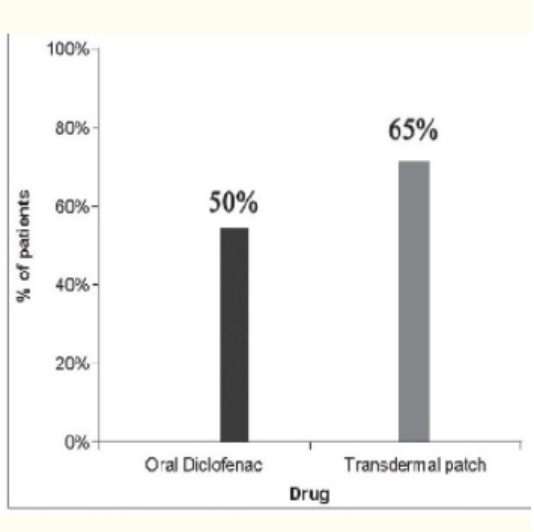

Figure 3: Distribution of patients reporting significant pain relief from day to day 2
(Source: created by author)

4. Discussion

In the present time, Transdermal systems for NSAIDs have become more popular and used in oral as well as traditional forms of drug administration. As per Azizogiu and Ozer (2020), anti Inflammatorytrasndermalatch enters the body through the skin and diffuses for systemic delivery. In this study, it has been found the patients who were using transdermal patches got significant relief in their pain. Using a transdermal patch was completely safe as no adverse effect was shown on the patients.

5. Conclusion

Anti-inflammatory transdermal patch has been found as a promising analgesic modality that can provide relief in moderate pain. The dental extraction shown in the study has provided evidence of established analgesic potency. Minimum adverse effects have been found on the patients who have consumed this dug. Transdermal therapy plays an important role in providing relief in post-traumatic pain and other moderate pain. Before the real scope of the transdermal diclofenac patch longer clinical trials with larger samples were needed to be conducted.

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Appendix

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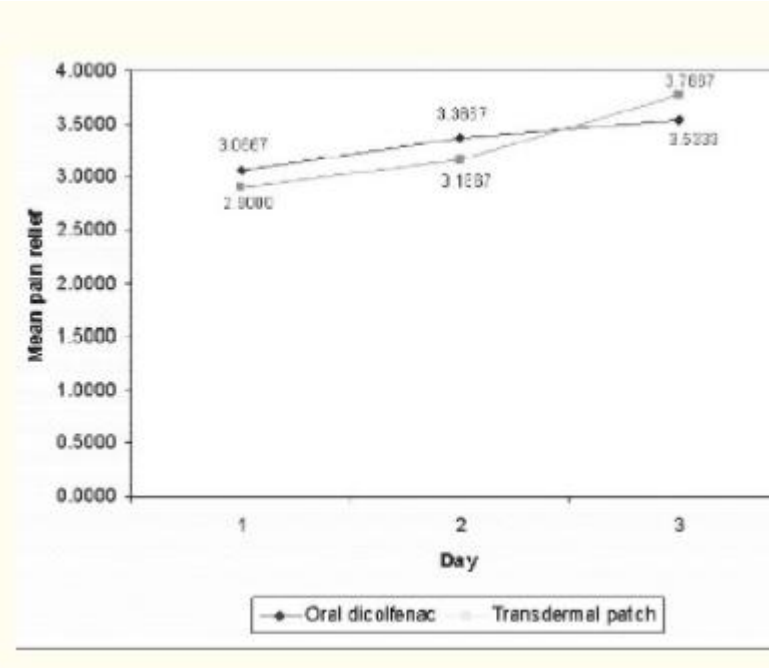

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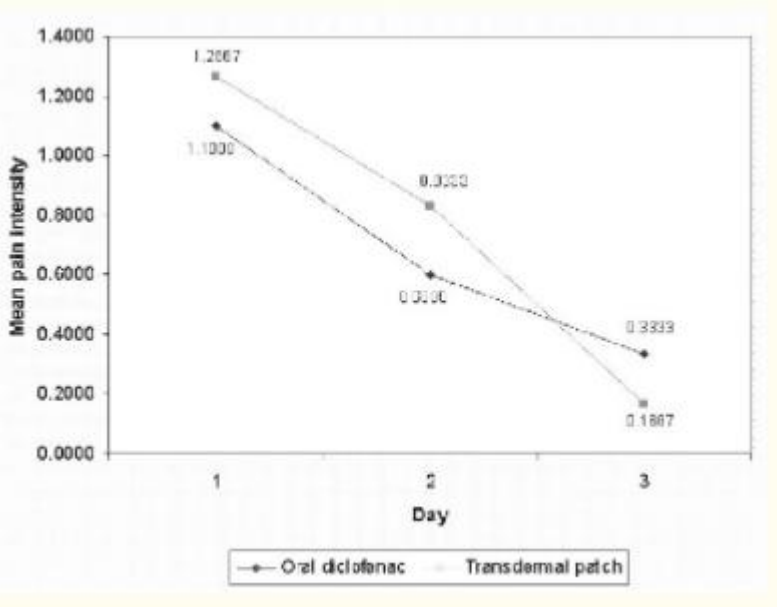

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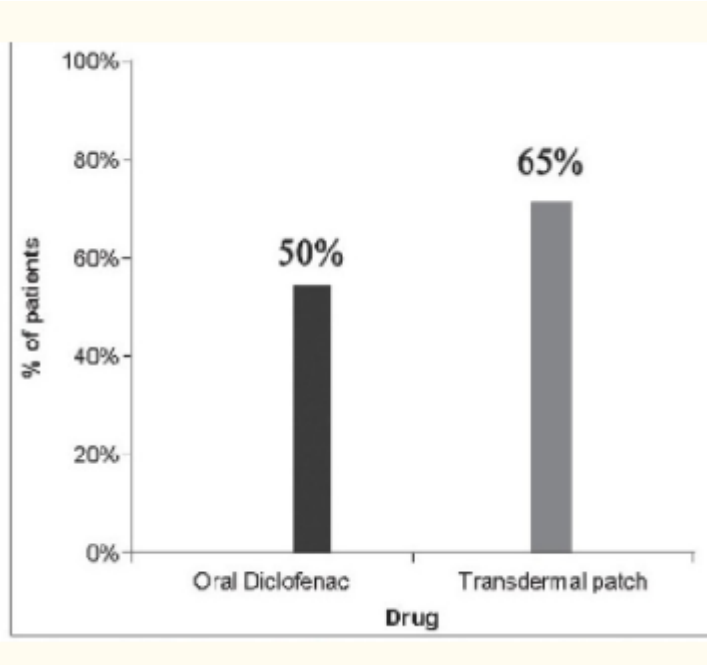

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