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A COMPARISON OF FOUR ANALGESICS IN POST–EPISIOTOMY PAIN

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Abstract: This study was conducted to compare the analgesic efficacy of four commonly used analgesics namely ibuprofen, analgin, paracetamol and aspirin in post-episiotomy pain. The subjects were healthy postpartum women on the obstetric service of Goa Medical College, each of whom received only one experimental medication. Subjective reports were used as indices of pain intensity or relief. Ibuprofen was found to be the most effective analgesic in post-episiotomy pain followed by analgin and paracetamol in that order. Surprisingly, aspirin was found to be no better than placebo.

Key words: ibuprofen analgin paracetamol aspirin post-episiotomy pain

INTRODUCTION

This study was carried out to compare the analgesic efficacy of four analgesics namely ibuprofen, analgin, paracetamol and aspirin.

Ibuprofen is an analgesic anti-inflamatory agent that is better tolerated than phenylbutazone and is widely used. Several studies have compared the analgesic efficacy of ibuprofen with other conventionally used analgesics. In one such study, ibuprofen is reported to be 16 to 28 times more potent an analgesic as compared to aspirin (1) while in another, 300 mg of ibuprofen was as effective as 900 mg of aspirin (2). Other reports have confirmed that ibuprofen is as effective as aspirin if not more at doses from 325 mg to 1200 mg (3,4). Abraham et al (5) compared the efficacy of ibuprofen with other analgesics in the relief of post-episiotomy pain and noted that 400 mg of ibuprofen was significantly better than 600 mg of aspirin in most parameters of pain.

Paracetamol has analgesic and antipyretic effects that do not differ significantly from those of aspirin. It is well tolerated and lacks many of the side effects of aspirin (6).

Analgin has potent analgesic and antipyretic actions but offers no distinct advantage over aspirin (7). Though its use is frowned upon because of the potential toxicity, the issue is far from settled, the drug continues to be used widely and hence was included in this study.

A search of the literature did not reveal any study involving either paracetamol or analgin in the management of post-episiotomy pain. Hence this study was undertaken to evaluate the comparative efficacy of four drugs namely ibuprofen, analgin, paracetamol and aspirin since all these four analgesics are the most commonly used in clinical practice.

METHODS

Our study is based on the methods of evaluation of post-episiotomy pain described by Bloomfield et al (8) and Abraham et al (5).

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Subjects were 100 healthy, consenting postpartum women on the obstetric service of Goa Medical College, selected by interview during the 24 hours after uncomplicated delivery. Approximately 8 to 10 ml. of 1% lignocaine was used to produce local anaesthesia during episiotomy.

Patients with a history of aspirin or ibuprofen sensitivity and those receiving other analgesics, sedatives or other psychotropic drugs within 6 hrs. of enrolment were excluded. Ferrous sulphate was routinely given during the postpartum period, but unless necessary, all other drugs were avoided. Provision was made to remove any patient from the study who experienced severe distress or who needed a rescue analgesic. Patients were confined to bed for the first 2 hrs. after enrolment and were intermittently out of bed during the remaining hours of the trial.

The trial was a concurrent comparison under double-blind conditions of five treatment groups: ibuprofen group, analgin group, paracetamol group, aspirin group and placebo group.

Because the trial was parellel between subject comparison only one of the four experimental treatments was given to each patient. Experimental medication consisted of single oral doses of 400 mg ibuprofen , 500 mg analgin, 500 mg paracetamol, 600 mg aspirin and 1 tablet of placebo (calcium lactate). All these drugs were of IP specifications and were obtained from the Hospital Central Pharmacy. The pharmacy procures drugs from Medical Stores Depot (MSD), Bombay and from firms having rate contract with Directorate General of Supplies & Disposal (DGS&D). All tablets were pre-packaged in code-numbered individual dose packets. The drug code for any patient could be broken without revealing the treatment received by other patients. Drug was given with a glass of water and patients were instructed to lie on their right side for 2 hours thereafter to reduce the variability in absorption of drugs.

Subjective reports were used as indices of response. Changes in pain intensity (PI), pain relief (PR) and development of side effects associated with treatments were evaluated for a total of 6 hours in uniformly conducted interviews by the same observer. Patients were awakened if necessary.

Each subject was interviewed before dosing (O hr) and seven times thereafter at an internal of 30 min/1 hr. The third observation was made at 1.5 hr and not 1 hr so as to avoid three successive observations at 1/2 hr interval.

At each observation, the patient reported her rating of PI, PR and side effects if any as follows:- ,

PI score : O (no pain), 1 (slight pain), 2 (moderate pain) and 3 (severe pain)

A pain intensity difference (PID) for each observation was calculated by substracting the pain intensity at that time from the premedication (baseline) intensity. The sum of the pain intensity differences (SPID) is the sum of the hourly PIDs weighted by the time interval between observations.

PR was scored as follows: 4 (complete relief), 3 (good relief), 2 (moderate relief) and 1 (slight relief).

Total pain relief score (TOTPAR) is the sum of hourly pain relief values weighted by the time interval between observations.

PI & PR are two frequently used estimates of analgesia. PR seems to be the most important measure (since that is the goal of treatment with analgesics) followed closely by PI. TOTPAR & SPID are derived parameters. Most investigators feel that TOTPAR score is the most important derived parameter in discriminating analgesic efficacy while SPID comes second. The patient was asked whether she had experienced dizziness, headache, nausea, burning pain in abdomen, sleepiness or sweating or any other effect she would like to record.

Results were analysed by analysis of variance (ANOVA) (9) to test the hypothesis that there would be no difference among treatments for the different parameters. Pairwise differences among treatments were determined using Mann-Whitney U-Test (10) and Tukey's A test (11). Significance is expressed at 0.05 level.

RESULTS

Table I shows the PI, PR, PID, SPID & TOTPAR scores in respect of the four analgesics and placebo at

TABLE I : Comparative analgesic profile in terms of mean scores and summary variables.

Pain Intensity Score	*Placebo* (N = 20)	*Aspirin* (N = 20)	*Paracetamol* (N = 20)	*Analgin* (N = 20)	*Ibuprofen* (N = 20)
0 hr	2.42	2.45	2.10	2.45	2.26
0.5 hr	2.09	2.09	1.73 P.A	1.82 P.A	1.55 P.A.N
1.5 hr	1.75	2.00	1.60 A	1.45 P.A	1.19 P,A,R,N
2 hr	1.75	1.90	1.23 P,A	1.18 P,A	0.98 P,A
3 hr	1.53	1.63	0.85 P,A	1.09 P,A	0.86P,A
4 hr	1.53	1.55	0.98 P,A	1.05 P,A	0.86 P,A
5 hr	1.53	1.55	0.98 P,A	1.09 P,A	0.86 P,A
6 hr	1.53	1.55	0.98 P,A	1.09 P,A	0.86 P,A
Pain Relief Score					
0.5 hr	0.80	0.61	1.00 A	1.54 P,A,R	1.41 P,A,R
1.5 hr	0.98	0.78	1.18 A	2.07 P,A,R	2.08 P,A,R
2 hr	1.24	1.00	1.36 A	2.30 P,A,R	2.67 P,A,R,N
3 hr	1.30	1.16	1.63 P,A	2.30 P,A,R	2.83 P,A,R,N
4 hr	1.36	1.30	1.48	2.22 P,A,R	2.50 P,A,R,N
5 hr	1.36	1.30	1.30	2.22 P,A,R	2.50 P,A,R,N
6 hr	1.36	1.30	1.32	2.22 P,A,R	2.50 P,A,R,N
PID Score					
0.5 hr	0.33	0.36	0.37	0.63 P,A,R	0.71 P,A,R
1.5 hr	0.67	0.45	0.59	1.00 P,A,R	1.07 P,A,R
2 hr	0.67	0.55	0.87 A	1.27 P,A,R	1.28 P,A,R
3 hr	0.89	0.82	1.25 P,A	1.36 P.A	1.40 P,A
4 hr	0.89	0.90	1.12	1.40 P,A,R	1.40 P,A,R
5 hr	0.89	0.90	1.12	1.36 P,A	1.40 P,A,R
6 hr	0.89	0.90	1.12	1.36 P,A	1.40 P,A,R
SPID	4.73	4.425 P	5.73 P,A	7.43 P,A,R	7.665 P,A,R,N
TOTPAR	7.38	6.645 P	8.11 P,A	12.95 P,A,R	14,45 P,A,R,N

P/A/R/N = Different from placebo/aspirin/paracetamol/analgin at 0.05 level.

regular intervals from the time of medication until 6 hours.

Aspirin was the least effective treatment as reflected in all the scores.

It can be seen from the PI score that there was a significant difference between paracetamol and placebo beginning 30 min after medication and continuing during the 6 hours of observation except at 1.5 hr. There was no significant difference between the two in terms of PR and PID scores.

Analgin was superior to paracetamol in terms of pain relief all through the observation period, but there was no significant difference between the two in terms of PI score.

Ibuprofen appears to be the most effective analgesic followed closely by analgin. There was a significant difference in the PR as well as PID obtained with ibuprofen as compared to that obtained with aspirin and paracetamol beginning at 0.5 hr and continuing through the six hours of observation (except PID at 3 hr).

The PI score with ibuprofen was significantly lower than with analgin at 0.5 hr and 1.5 hr whilst the PR was significantly more from 2.0 hr onwords. However, there was no significant difference between these two treatments in terms of PID score.

The summary variables SPID and TOTPAR show that out of the four analgesics ibuprofen was the most effective followed by analgin, paracetamol and aspirin.

None of the patients reported any adverse reactions referable to medication.

DISCUSSION

It is seen from our study that ibuprofen 400 mg was clearly the most effective analgesic in post-episiotomy pain. It was significantly better than 500 mg analgin, 500 mg paracetamol or 600 mg aspirin on most parameters.

Abraham et al (5) have shown that ibuprofen is more effective than aspirin or zomepirac but to the best of our knowledge a direct comparison in the same study of the four commonly used analgesics i.e. ibuprofen, analgin, paracetamol and aspirin has not been done. Our study shows that ibuprofen is the most effective, analgin comes next, followed by paracetamol.

Results obtained with aspirin in our study strike a discordant note. Despite being an effective analgesic drug and having proven value in post-episiotomy pain, aspirin appeared to be no superior to placebo in our study. Whilst it is difficult to explain this finding it probably calls for stricter quality control of drugs supplied to general hospitals.

A curious phenomenon observed in Fig. 1 and Fig. 2 is that the graphs for various analgesics exhibit a plateau phase from 4 hours to 6 hours. Logically one would expect the analgesic effect to wear off gradually after 3 to 4 hours and so the graphs should have shown a downward trend instead of a plateau. In this connection it should be noted that women on the obstetric service of our Medical College are mostly from lower socioeconomic and educational background and might have found it difficult to register the exact PI score and PR score once the peak analgesic effect had been reached and the effect was slowly wearing off. Such problems are sometimes encountered when one is trying to quantify a subjective sensation which cannot really be measured in any definitive sense (12).

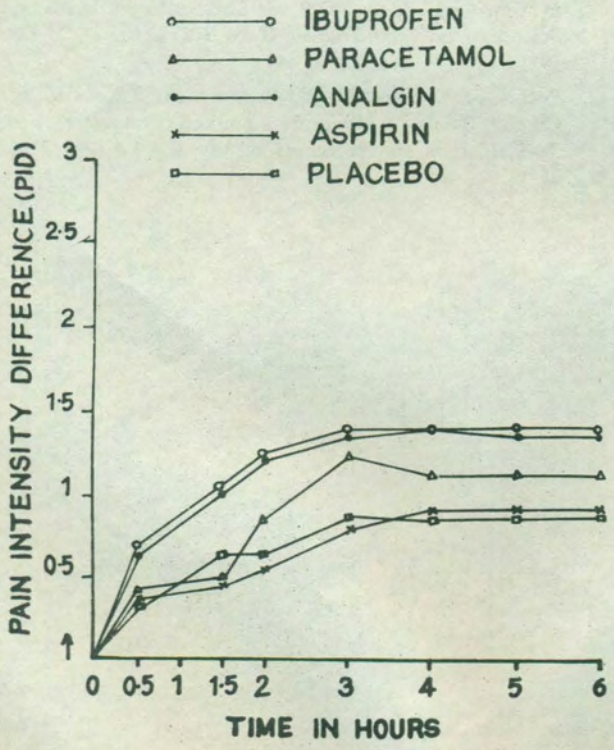

Fig. 1: Time-effect curve for mean PID.

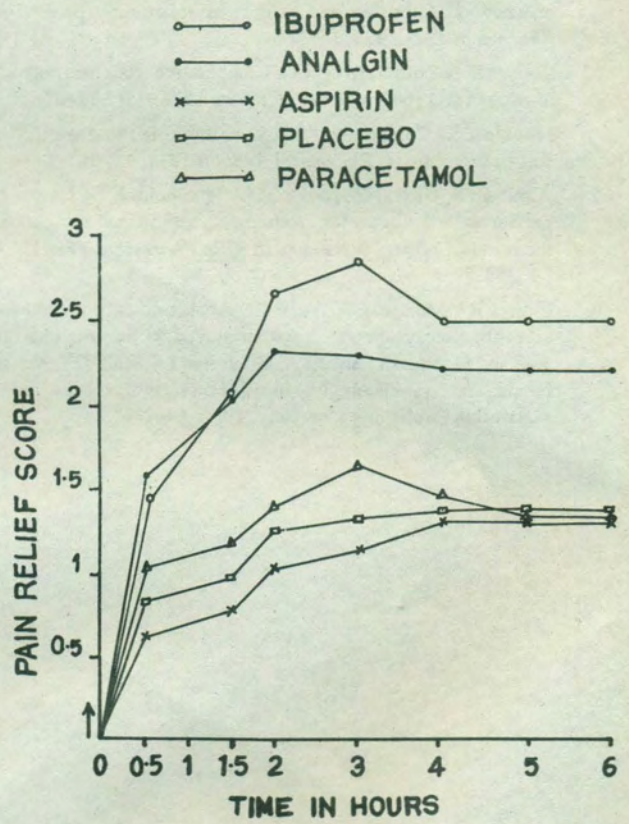

Fig. 2: Time-effect curve for mean pain relief.

Alternatively, the possibility of a genuine 'carry over' analgesic effect in such situations cannot be ruled out. More work from this angle needs to be done.

In conclusion, ibuprofen is the most useful analgesic for post-episiotomy pain.

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