

Comparative Evaluation of Efficacy of Tramadol with Pentazocine for Labour Analgesia and their effects on Foetal Outcome

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Summary:

The present study was undertaken to compare the effect of 100 mg intramuscular tramadol to 30 mg intramuscular pentazocine for labour analgesia.

A total of 60 cases with 37-42 weeks pregnancy in labour, without any foetal or maternal complications were selected. Out of them Inj. Tramadol was given to 30 cases while rest of the 30 patients received injection Pentazocine.

In Tramadol group pain relief was observed in 80% cases, effect started as early as 7-8 min and continued for 2.13 hrs. While in Pentazocine group pain relief was observed in only 60% cases with delayed onset (15-16 min), effect lasted for 2.67 hours. Maternal and foetal complications were slightly more in pentazocine group.

Introduction

Motherhood though rewarding seems to require sacrifice on part of the women. i.e. to bear the extremely painful process of child birth. To overcome this problem a number of pharmacological agents have been tried.

Tramadol, a centrally acting drug with low affinity for opioid receptors and pentazocine a weak antagonist and potent agonist for opioid receptors are currently being studied in our department for relief of labour pain. Progress of labour, foetal outcome and side effects were compared in both the groups.

Material and Method:

Present study was conducted in the department of Gynaecology and Obstetrics, S. N. Medical College, Agra.

This series included 60 cases out of which 30

cases were treated with tramadol and in remaining 30 cases injection pentazocine was given.

Both primi and multigravidae with 37 to 42 weeks pregnancy with vertex presentation in established labour i.e. effective uterine contractions, good cervical effacement and cervical dilatation not less than 4 cm. were included in the study.

Patients with previous uterine scar, malpresentation, multiple presentation, absent membranes, antepartum haemorrhage, cephalopelvic disproportion, preeclamptic toxemia and other medical and psychiatric diseases were excluded.

In well selected cases, a general and systemic examination was undertaken. Obstetric examination, inclusive of abdominal and per vaginal examination were performed and informed consent was taken. All cases were done in consultation with anaesthetist and paediatrician.

In tramadol group, Inj. Tramadol (Tramazac) 100 mg was given by deep intramuscular injection in upper and outer quadrant of gluteal region with 2 ml syringe. While in pentazocine group, Inj. Pentazocine (Fortwin) 30 mg was given by deep intramuscular injection in the gluteal region.

Time taken for onset of analgesic action was noted by verbal rating score. All resuscitative measures for mother and baby were kept ready. Vital parameters, foetal heart rate and progress of labour were checked repeatedly. Mode of delivery was noted, apgar score of every infant was noted at 1 and 5 min. Any complication or emergency reaction in both groups were noted.

Observation

Both the groups were comparable in age, parity, socioeconomic status and locality of patients.

Among both groups 50% patients were primigravidae while 50% were multigravidae. Mean age of patients in tramadol group was 25 yrs., while in pentazocine group it was 24.63 yrs. Maximum patients were of low socio-economic status and from rural locality.

Mean gestational age was 38.13 weeks in Tramadol and 38.00 weeks in Pentazocine group.

By giving I/M tramadol 80% cases responded, response was excellent in 23.33% cases and average in 56.67% cases while in pentazocine group pain relief was observed in only 60% of cases with excellent pain relief in only 6.67% cases (Table-I).

Table-I:
Degree of pain relief in Tramadol and Pentazocine groups

Degree of pain relief	Tramadol group		Pentazocine group	
	No.	%	No.	%
Poor (Score I)	6	20	12	40
Average (Score II)	17	56.67	16	53.33
Excellent (Score III)	7	23.33	2	6.67
Mean	2.03		1.67	
S.D.	0.67		0.60	
t value	2.211		p<0.05	

Table - II Onset and duration of analgesia

Analgesia		Tramadol Group		Pentazocine group		t	P
		Mean	S.D.	Mean	S.D.		
Onset	Mean	7.40	15.60	7.918	<0.01		
	S.D.	1.77	4.66				
Duration	Mean	2.13	2.67	3.431	<0.05		
	S.D.	0.58	0.38				

Mean onset of analgesia was early in Tramadol group (7.40 min.) in comparison to pentazocine group (15.60 min). However mean duration of analgesia was

slightly more with pentazocine (2.67 hrs.) in comparison to tramadol (2.13 hrs.) (Table-II).

On correlating degree of pain relief with different physical factors, it was seen that in both the groups pain relief was maximum with 20-25 yrs. age group, multigravidae, stable personality, low socioeconomic status and rural locality.

Tramadol analgesia causes no appreciable changes in maternal pulse rate and blood pressure while with pentazocine mean pulse rate was significantly increased 1 hr. after giving injection (9.80/min.) both systolic and diastolic blood pressure were increased and changes in systolic blood pressure were significant (Table-III).

Table-III
Changes in Maternal Pulse rate, systolic and diastolic blood pressure.

Changes 1hr. after injection	Tramadol group		Pentazocine group		t	P
	Mean	S.D.	Mean	S.D.		
Pulse rate/min	0.47	3.04	9.80	2.75	2.46	<0.05
Systolic B.P./min	1.30	4.52	15.5	4.49	3.10	<0.05
Diastolic B.P./mm	0.53	4.56	4.37	5.10	1.95	>0.05

Mean duration of 1st stage of labour was more in pentazocine group (9.13 hrs.) in comparison to tramadol group (8.90 hrs.) similarly mean duration of IInd stage was more in pentazocine group, while mean duration of IIIrd stage was less in pentazocine group (8.20 min.) in comparison to tramadol group (9.03 min.) (Table-IV).

Table-IV: Duration of stages of labour in tramadol and pentazocine groups

Groups	Stage I (Hrs)		Stage II(Hrs.)		Stage III(min.)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Tramadol group	8.90	3.71	0.68	0.52	9.03	4.49
Pentazocine group	9.13	3.41	0.73	0.69	7.20	4.20
t	0.250		0.317		1.710	
P	>0.05		>0.05		>0.05	

Normal delivery occurred in 86.66% cases of tramadol group in comparison to 80% cases of pentazocine group. Operative interference was more in pentazocine group (20% cases) while in tramadol group it was needed in only 13.34% cases (Table V)

Table-V:
Mode of delivery in different groups

Mode of delivery	Tramadol group		Pentazocine group	
	No.	%	No.	%
Normal	26	86.66	24	80.00
Forcep	2	6.67	2	6.67
Caesarean section	2	6.67	4	13.33

Mean apgar score was more in tramadol group in comparison to pentazocine group. It was 9.2 in

7.73 at 1 min. and 9.60 and 9.33 at 5 min. in tramadol and pentazocine groups respectively (Table-VI).

Table-VI: Mean apgar score of neonates.

Time	Tramadole group		Pentazocine group	
	Mean	SD	Mean	SD
At 1 min.	7.93	1.67	7.73	1.26
At 5 min.	9.60	0.60	9.33	0.91

Side effects were more in pentazocine group in the form of nausea, vomiting (13.34%), tachycardia (23.33%) increase in blood pressure (38.33%) and foetal distress (10% cases) (Table-VII).

Table-VII: Side effects in tramadol and pentazocine groups

Side effects	Tramadol group		Pentazocine group	
	No.	%	No.	%
Nausea	2	6.67	2	6.67
Vomiting	1	3.33	2	6.67
Drowsiness	1	3.33	4	13.67
Tachycardia	2	6.67	7	23.33
Increase in B.P.	2	6.67	10	33.33
Post partum				
Haemorrhage	2	6.67	2	6.67
Foetal distress	1	3.33	3	10

Discussion and Conclusion:

Prasertsawat et al (1986) observed that 100 mg tramadol gives satisfactory to good effect in 78% patients. However, Suuonakote et al (1986) reported that 59% patients did not obtain adequate analgesia with Tramadol.

Nawani et al. (1996) observed excellent to average pain relief with tramadol in 80% cases while Sarkar and Mukhopadhyay (1997) observed satisfactory pain relief in 13% and average pain relief in 85% cases.

Mean onset of analgesia was 7.40 min. and effect lasted for 2.13 hrs. in present study. While Husslein et al (1987) concluded that distinct analgesic effect was observed after 10 min. and lasted for 2 hrs.

Duration of different stages of labour was not increased after use of tramadol while in pentazocine group 1st stage of labour was significantly prolonged. Bitsch et al (1980) also observed that tramadol has no effect on duration and intensity of uterine contractions and on duration of different stages of labour.

Maternal and foetal side effects were very few in tramadol group in comparison to pentazocine group. Arend et al. (1978) also concluded that there were lesser side effects with tramadol than pentazocine.

In present study we have found that tramadol is superior in all the respects, onset was earlier, degree of pain relief was better and there was no danger of maternal and foetal neonatal respiratory depression. Operative interference and complications were more in pentazocine group. The only advantage of pentazocine over tramadol was that mean duration of analgesia was more with pentazocine (2.67 hrs.) in comparison to tramadol (2.13 hrs.) although it was not significant.

All these findings confirm the superiority of tramadol over pentazocine for labour analgesia.

References:

1. Arend L, Von Arnim B., Nijssen J., Scheel J. Hohe F. - *Forschung/Drug Research* 28:199-208, 1978.
2. Bitsch M., Emmrich J., Hary J., Lippach G. *Fortschritte der medizin* 98: 632-634, 1980.
3. Husslein P., Kubista E., Egarter C.H. *German Zeitschrift fur Geburtshilfe and Perinatologie* 191: 234-237, 1987.
4. Nawani M., Sharma S., Nawani D.P., Gupta V. *J. of U.P. Chapter of Obstetrics and Gynaecology* volume II, 41, Feb-March, 1996.
5. Prasertsawat P.O., Herabutya Y., Chaturachinda K. *Obstetrics analgesia: Current Therapeutic Research* 40: 1022-11028, 1986
6. Sarkar B., Mukhopadhyay A.K. *Journal of obstetric and gynaecology of India*. 47:42, 1997.
7. Suuonakote T., Thitadilok W., Atisook R. *J. of Medical Association of Thailand* 69, 576-80, 1986