

TRILINE INHALATION FOR OBSTETRICAL ANALGESIA

by

ONKAR SINGH,* M.B.,B.S., D.A., M.S.

and

PRITAM SINGH,** M.S., F.A.M.S., F.F.A.R.C.S.

In 1941 Hewer and Hadfield introduced Triline which in concentration of 0.35 to 0.5% in air was approved by Central Midwives Board in 1955. Since then much work has been done by Helliwell *et al* (1948), Major *et al* (1966), Major *et al* (1967), Rosen, M. *et al* (1969) and Jha B. K. *et al* (1973).

Material and Methods

Analgesia was administered to 50 patients admitted in Govt. Hospital for Women, Amritsar. None of the patients received pre-natal training. However, all the patients were educated and they themselves opted for obstetrical analgesia. This factor helped us a lot as they could easily follow the instructions which were given at the time of admission.

Analgesia was given by self-administered apparatus (T.T. inhaler) for which patients co-operation was required. T.T. inhaler i.e. Tandon Triline Inhaler (Tandon, G. C. *et al*, 1970) was designed in A.I.I.M.S., New Delhi. It is a simple portable instrument which employs the principles of thermostability. By this instrument analgesia can be given by the

patient herself. It makes use of the body of the patient as a constant temperature bath to heat or cool the vaporizer in relation to ambient temperature as the need may be. Heat transfer is obtained by direct body contact and by causing expired air to flow through the vaporizer.

Patients were asked to hold the vaporizer with right hand. Through the mouth piece of the vaporizer, patient was asked to blow in and out. The inhaler has got two holes through which air enters but when the patient holds the inhaler one hole is closed by a spring clamp. So initially concentration delivered is 0.5%, but when gradually patient becomes relaxed and drowsy, spring clamp is released and then the concentration falls to 0.35% as more air dilution occurs. So this inhaler can be safely left over to the patient to be intermittently checked by the doctor. Analgesia was started when the pains were very severe.

Following criteria were used for assessment:

(1) Observations by The Doctor

(i) Mother's response to uterine contractions:

(a) Satisfactory i.e. patient lies quietly during contractions.

(b) Slight response (in between) patient grimaces and clinches fists but does not cry.

*Senior Lecturer.

**Ex-Head.

Department of Anaesthesia Medical College, Amritsar (Punjab).

Accepted for publication on 3-5-1979.

- (c) Unsatisfactory i.e. patient cries.
 (ii) Level of consciousness:
 (a) Satisfactory i.e. patient is alert with eyes open.
 (b) In between—patient is drowsy, but responds to questioning.
 (c) Unsatisfactory—patient is semi-conscious

(2) *Opinion of The Mother*

(i) Every mother was asked at 15 minutes, 1 hour, 3 hours, 6 hours, 24 hours the following questions: Do you consider that what you had been given to inhale helped you completely/slightly or nothing at all.

(ii) Occurrence of nausea and vomiting.

(3) *Condition of Child*

It was assessed according to the Apgar score and the results were charted.

Observations and Results

The patients were in the age group of 18-30 years with a mean age of 22 years. 78% of the patients were primigravidae.

The inhalation was started when the pains were severe so as to give the minimum inhalation time interval. Majority of the patients i.e. 58% got inhalations for

less than 3 hours and only 10% of the patients got triline between 4 to 5 hours. However, the average duration of inhalation was 3 hours and 20 minutes.

According to the opinion of doctors, analgesia was quite satisfactory in 70% of the patients, 56% of the patients were quite alert. However, according to doctors in 8% of the patients analgesia was inadequate and 14% of the patients were drowsy and unconscious, but could be aroused by painful stimuli i.e. pinching. 68% of the patients were happy and satisfied and opted for triline the next time also. But 10% of the patients were not convinced with the usefulness of triline analgesia (Table I).

In 72% of the patients, there was vertex presentation while in 16% of the patients outlet forceps were applied (Table II).

In 96% of the babies there was no depression at all as the Apgar score was between 7-10. Only 4% of the case Apgar score was 6, but in these 2 babies Apgar score was quite satisfactory after 5 minutes.

Four patients complained of nausea during inhalation, and 2 patients vomited during inhalation. 1 patient stopped taking inhalation after 1½ hours due to nausea and vomiting. Only 1 patient

TABLE I
Assessment of Analgesia

Response	By doctor		Level of consciousness	
	No. of patients	Percentage	No. of patients	Percentage
Satisfactory	35	70	28	56
In between	11	22	15	30
Unsatisfactory	4	8	7	14
Total	50	100	50	100

TABLE II
Mode of Delivery

Mode of delivery	Number of patients	Percentage
Spontaneous vertex	36	72
Application of forceps	8	16
Breech	4	8
Others	2	4
Total	50	100

complained of headache when she was brought to the bed after delivery.

Discussion

Triline has been used for pain relief for many years in concentrations of 0.35 to 0.5%. The mixture of air and Triline was given by T.T. inhaler (Tandon, *et al* 1970). As Triline is comparatively cheap, it is most suitable for widespread use.

Majority of the patients (58%) were given Triline for less than 3 hours. Triline given for 3-4 hours has been proved not to possess any adverse effects on the foetus. In 70% of the cases analgesia was quite satisfactory. This coincides with the findings of Rosen, *et al* (1969) who proved in their series that Triline gives 76% satisfactory results. Major *et al* (1967) though proved that with Triline patients got satisfactory relief but in only 47.7% of the patients analgesia was satisfactory as these patients were alert and fully awake. In our series 56% of the patients were alert and fully conscious, though analgesia was quite satisfactory in more than 70% of the cases. It may be mentioned here that all the patients received Triline analgesia for the first time. In 96% of the babies, there was no depression at all and the Apgar score was bet-

ween 7-10. This showed that Triline is quite safe. As regards the side effects like nausea and vomiting, there is no exact figure available and detailed enquiry and observation are essential to determine the true rate of nausea and vomiting (Mushen and Wood, 1944; Burtles and Peckett, 1957 and Riding, 1960). In our series 8% of the patients complained of nausea during inhalation and in only 4% of the patients, there was vomiting. Only 1 patient complained of severe vomiting and she refused to take Triline after 90 minutes of intermittent inhalation.

Conclusion

Triline is quite satisfactory for Obstetrical Analgesia, if given under supervision and if minimum time is allowed for inhalation.

Acknowledgement

We are thankful to Prof. C. Phillips, Head of the Department of Obstetrics and Gynaecology, Medical College, Amritsar and her staff members, specially Dr. Madhu Nagpal, for their help and cooperation in carrying out this work.

References

1. Helliwel, P. J. and Hutton, A. M.: Report of an investigation of Triline in labour, Royal College of Obstetrics and Gynaecology.
2. Hewer, C. C. and Hodfield, C. P.: Trichlorethylene as an inhalation anaesthetic. *Brit. Med. J.* 1: 924, 1941.
3. Rosen, M., Mushin, W. W., Jones, P. L. and Jones, E. V.: *Brit. Med. J.* 3: 263, 1969.
4. Tandon, G. C., Thaper, R. S., Kalle, N. R. and Yajnik, S.: *Ind. J. Anaesthesia.* 18: 423, 1970.