

The African Journal of Medicine and Medical Sciences

Editor: L.A. Salako
Assistant Editors: A.O. Falase and B. Adelusi

Editorial Board:

A.K. Addae	R.A. Elegbe	N.C. Nwokolo
S.A. Adebajo	G. Emerole	H.O. Obianwu
O.O. Adekunle	J.G.F. Esan	S.A. Oduntan
A. Adeloje	E.E. Essien	E.O. Ogunba
A.F. Aderounmu	G.O. Ezeilo	O. Ogunbode
C.O. Adesanya	A. Fabiyi	M.O. Olatawura
A. Adetugbo	J.B. Familusi	D.A. Olatunbosun
A.A. Adeyokunnu	D. Femi-Pearse	E.O. Olurin
A. Agboola	A.F. Fleming	Oyin Olurin
O.O.O. Ajayi	K.A. Harrison	A. Omololu
E.O. Akande	P.A. Ibeziako	B.O. Onadeko
O.O. Akinkugbe	A.C. Ikeme	G. Onuaguluchi
O.O. Akinyemi	A.O. Iyem	A.O. Osoba
A.U. Antia	F. Jaiyesimi	B.O. Osotimehin
T. Atinmo	A.O.K. Johnson	B.O. Osunkoya
O. Ayeni	T.O. Johnson	B.O. Osuntokun
E.A. Ayoola	T.A. Junaid	D.D.O. Oyebola
E.A. Bababunmi	T.M. Kolawole	A.B.O.O. Oyediran
O. Bademosi	K. Knox-Macaulay	E.H.O. Parry
E.A. Badoe	O.A. Ladipo	T.F. Solanke
T.O. Cole	S.B. Lagundoye	O. Tomori
O.A. Dada	C.O. Mbanefo	F.A.O. Udekwu
A.B.O. Desalu	D.G. Montefiore	A.O. Uwaiifo
L. Ekpechi	E.O. Nkposong	

Volume 14
1985

BLACKWELL SCIENTIFIC PUBLICATIONS
Oxford London Edinburgh Boston Palo Alto Melbourne

Self-administered Entonox (50% nitrous oxide in oxygen) in labour: report of the experience in Ibadan

O. A. SOYANNWO

Department of Anaesthesia, University College Hospital, Ibadan, Nigeria

Summary

The effectiveness, safety and acceptability of self-administered Entonox (50% nitrous oxide in oxygen) in 150 Nigerian women during labour was studied. 86.7% of those who received Entonox alone reported satisfactory pain relief while analgesia was also satisfactory in all those who received Entonox plus intramuscular analgesic. Severe drowsiness occurred in two patients and the method was acceptable to 90% of the mothers in the study. To prevent exhaustion of the mothers and marked drowsiness, intramuscular analgesic should be used early in labour followed by Entonox in the second half of the labour.

Résumé

Le problème de l'efficacité, de la sûreté et de l'acceptabilité de l'auto-administration de l'Entonox (50% de l'oxyde azoteuse en oxygène) par 150 nigérianes en couches fut étudié. 86.7% de celles qui avaient reçu uniquement de l'Entonox avaient attesté à un soulagement satisfaisant, tandis que l'analgésie était tout aussi satisfaisante chez toutes celles qui avaient reçu de l'Entonox avec de l'analgésique intramusculaire. Deux malades avaient de la somnolence sévère, mais la méthode était acceptable à 90% des mères observées. Pour prévenir la fatigue des mères, et pour éviter une somnolence marquée, l'analgésique intramusculaire devrait être administrée dès le début du

travail d'accouchement, suivi par l'administration de l'Entonox au cours de la deuxième moitié de la durée du travail.

Introduction

Several methods of pain relief during labour are now accessible to every woman in most developed countries. In developing countries however, due to shortage of staff, drugs, essential monitoring devices and late presentation of patients in hospitals, most women receive very little in the way of analgesia during labour. In the University College Hospital, Ibadan, the intramuscular injection of narcotic analgesics early in labour is the only method of analgesia routinely used.

The effectiveness of inhalation of a fixed concentration of 50% nitrous oxide in oxygen (Entonox) for analgesia during labour has been well documented (Holdercroft & Morgan, 1974; Rosen *et al.*, 1969). It has been shown that Entonox has no cumulative effect and no deleterious effect on both mother and foetus (Macgregor, 1967; McAnemy & Doughty, 1963). This has made it possible to use it throughout labour. This study was carried out to assess the effectiveness, safety and acceptability of Entonox by Nigerian women during labour.

Materials and methods

Before commencing the study, a series of talks and demonstration on the Entonox portable demand apparatus was given to the labour ward nursing staff, anaesthetic resident doctors and pupil midwives. All patients were first introduced to the apparatus by either the author, a resident anaesthetist or a midwife on admission

Correspondence: Dr. O. A. Soyannwo, Department of Anaesthesia, University College Hospital, Ibadan, Nigeria.

This paper was presented at the 23rd Annual Conference of the West African College of Surgeons in Lomé, January 1983.

Table 3. Degree of drowsiness

Treatment	Drowsiness		
	Mild	Moderate	Severe
Entonox alone	76 (66.7%)	36 (31.6%)	2 (1.7%)
Entonox + narcotic analgesic	20 (55.6%)	16 (44.4%)	—
Total No. of patients	96 (64%)	52 (34.7%)	2 (1.3%)

Complications

Only five patients had complications related to the use of Entonox: four patients vomited while another one became unconscious following continuous inhalation. This was discovered early and the use of the agent was discontinued.

Safety

The pulse rate and blood pressure of all the patients remained within satisfactory levels throughout the period of the study. One hundred and thirty-six babies (97.1%) out of the 140 babies delivered vaginally had Apgar scores of 8–10 and only the four babies delivered by breech extraction had scores less than 5 and even these were successfully resuscitated.

Acceptability

One hundred and thirty-five (90%) of the patients indicated their willingness to use Entonox analgesia for subsequent deliveries. It is interesting to note that three patients who were not included in this study but were on admission and witnessed the use of Entonox, requested for its administration during their own labour.

Discussion

Apart from the method of pain relief employed, traditional and racial attitudes to childbirth plus individual pain threshold influence the judgement of pain relief therapy during labour. The effectiveness of self-administered inhalational agent depends on how closely peak brain concentration can be made to coincide with the peak of the contraction. Hence accurate timing of inhalation is essential to successful administration. In the report by Rosen *et al.* (1969)

72% of mothers had considerable or complete pain relief following Entonox inhalation during labour while Oronsaye and Ukponmwan (1982) reported that 42% had satisfactory pain relief. The higher percentage of satisfactory pain relief (86.7%) obtained in this study might be because the patients felt quite satisfied with having considerable part of their pain relieved rather than expecting complete relief of pain. It was not surprising therefore that two of the patients who had only fair pain relief which was graded unsatisfactory, are also willing to use the method during the next confinement.

Patients who started inhalation early in labour complained of being tired towards the end of labour. This was also related to the degree of drowsiness. It is interesting to note that the prolonged inhalation of Entonox did not however affect the condition of the babies nor the incidence of obstetric complications. Most of the attending midwives felt that mild to moderate degrees of drowsiness actually enhanced the patients' co-operation at the actual delivery. In the report by McAnemy and Doughty (1963), about one-fifth of mothers felt sick or vomited. Only four patients (2.7%) vomited in this series however, although no anti-emetic was administered. This low incidence might be due to racial differences.

The use of Entonox analgesia during the second half of labour has a positive advantage over narcotic analgesic drugs, as the latter are associated with some degree of respiratory depression as shown by the Apgar Score of the babies at birth (Duncan, Ginsburgh & Morris, 1969; Rosen *et al.*, 1969). The greatest advantage of intermittent inhalation of Entonox in this environment is that it can be used safely without increased demand on the already over-worked staff. However, it is important to give lectures and demonstrations on the technique of self-administered Entonox to the mothers while attending the antenatal clinic. In order to

reduce cost and also prevent severe drowsiness and exhaustion of the mothers, intramuscular analgesic should be used in early labour, while this is followed by Entonox in the later part of the labour.

Acknowledgments

I am grateful to Professor S. A. Oduntan for his constant advice and encouragement throughout the period of this study. I also thank Industrial Gases Nigeria Limited for supplying the Entonox used in the study, the Labour Ward nursing staff for their co-operation, Alhaji B. A. A. Sodique and Mr G. O. Adedokun for secretarial assistance.

References

- Apgar V. (1966) The newborn (Apgar) scoring system reflections and advice. *Paediat. Clin. N. Amer.* **13**, 645-50.
- Duncan, S.L., Ginsburgh, J. & Morris, N.F. (1969) Comparison of Pentazocine and Pethidine in normal labour. *Amer. J. Obstet. and Gynaec.* **105** 197-202.
- Holdercroft, A., & Morgan, M. (1974) An assessment of the analgesic effect in labour of Pethidine and 50% nitrous oxide in oxygen (Entonox). *Obstet. Gynaec. Bri. Commonwealth*, **81**, 603-607.
- Macgregor, W.G. (1967) Analgesia in childbirth N.M. Conference Lecture. *Nursing Mirror* 23 June 1967.
- McAnemy, T.M. & Doughty, A.G. (1963) Self administered nitrous oxide and oxygen analgesia in Obstetrics. *Anaesthesia*, **18**, 488-497.
- Oronsaye, A.U. & Ukponmwang, S.O. (1982) The acceptance of Entonox analgesia by Nigerian women in established labour. *Nig. Med. J.* **12**, 21-25.
- Rosen, M., Mushin, W.W., Jones, P.L. & Jones, E.V. (1969) Field trial of methoxyflurane, nitrous oxide and trichloroethylene as obstetrics analgesics. *Brit. Med. J.* **3**, 263-267.
- Apgar V. (1966) The newborn (Apgar) scoring

(Received 11 May 1984; accepted 20 June 1984)

DIGITIZED BY E-LATUNDE ODEKU LIBRARY