asphyxiated newborns with room air or 100% oxygen at birth: A multicentric clinical trial. Indian Pediatr 2003; 40: 510-518.

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## Resuscitation of Asphyxiated Newborns(2)

I have following comments to offer in respect of this excellent multicentric study(1),

1. The inclusion criteria included newborns weighing more than 1000 grams. A look at the baseline neonatal variables shows that on taking mean birth weights and standard deviation into account, there were no babies below a birth weight of 1800 grams. Were no such babies delivered; as there is no mention about their exclusion?
2. Hypoxic Ischemic encephalopathy (HIE) is defined clinically on the basis of a constellation of findings, including a combination of abnormal consciousness, tone and reflexes, feeding, respirations, or seizures. Staging of HIE in to Stages I, II and III describes the clinical states of asphyxiated infants over 36 weeks gestational age(2). How was the same staging system used for babies of lesser gestational ages?
3. There is no record of cord blood pH, a significant indicator of perinatal asphyxia.
4. A significant number of neonates including preterm neonates who develop hyaline membrane disease are dependent on Oxygen from the time of birth. The recommendation about resuscitation with room air may not be applicable to this group of neonates.

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2. Sarnat HB, Sarnat MS. Neonatal encephalopathy following fetal distress: A clinical and electroencephalographic study. Arch Neurol 1976; 33: 696-705.

## Resuscitation of Asphyxiated Newborns(3)

We have the following comments to offer on the recent article(1) on this subject:

1. The room air group in treatment failure was switched over to 100% oxygen supplementation after 90 seconds of resuscitation. According to international guidelines for neonatal resuscitation 2000(2), some of the babies in room air group might have received external cardiac massage by then. Generally myocardial failure does not occur until both pH and $PaO_2$ are extremely low, approximately 6.9 and 20 mm of Hg,

respectively. Even in the absence of myocardial failure, effective ventilation of the lungs with a high oxygen concentration may correct acidosis by lowering $PaCO_2$, oxygenating the blood and adequately dilating the pulmonary vascular bed(3). Hence the use of room air for both the above situations is not justified.

2. The study included preterm babies also where Sarnat and Sarnat staging was done for documenting HIE which can only be used for babies over 36 weeks of gestation(4).

3. Median apgar score at 1 minute is 3 each in room air and 100% oxygen group as per *Table II*, whereas in the text it has been stated that room air group had significantly higher 1 minute apgar score than 100% oxygen group.

4. As treatment failure, overall mortality, HIE and asphyxia related mortality are higher in both the groups, it seems that either of two modalities of treatment are not ideal. Perhaps better may be lying in between the two *i.e.*, room air and 100% oxygen. As 100% oxygen has been noted to be associated with a variety of adverse reactions including increased generation of free radicals, decreased central nervous system sodium potassium ATPase function and decreased dopamine metabolism(5).

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## Resuscitation of Asphyxiated Newborns: Reply

1. At the outset of the article it was mentioned that this was a quasi-randomized trial. It is an acceptable statistical method. Three other previous trials, 2 using the same quasirandomization method(1,2) and one a randomized trial(3) have similar results. There is no reason the results should be different, since asphyxia itself is a random event.
2. The use of 4 L/min was standardized in an earlier trial(1), wherein it was observed to deliver 100% oxygen.
3. The use of 5-min apgar score may not have been the best primary outcome variable but is physiologically not incorrect. Besides, important secondary variables such as HIE and mortality were also