Mapleson D continuous positive airway pressure system for weaning of mechanical ventilation in pediatric patients

Sir,

We read with great interest the original article written by Palomero-Rodríguez *et al*.[1] published in the latest issue of your journal. At first, we would like to commend the authors for their endeavor; however, at the same time, we would like to make the following comments, explanation to which is expected to benefit the general readers of the journal.

The abstract mentioned that "The primary goal of that study was to assess the usefulness of the 'Mapleson D continuous positive airway pressure (CPAP) system' for weaning of mechanical ventilation (MV) in infants who received MV over 24 h" and that "All infants who received MV for more than 24 h in the last year were enrolled in the study." However, the main text stated that "All infants and children who received prolonged MV for more than 72 h during 4 years and … were eligible for the study." Again, in the subsequent paragraphs, they stated that "Patients were classified into two groups according to the length of MV: Patients with acute respiratory failure with MV for more than 48 h (MV >48 h) and patients with MV fewer than 48 h (MV <48 h)." Further, they mentioned in the inclusion criteria that "Patients were enrolled if they met the following criteria: (a) Full-term infants to 16 years of age…," but the results revealed that the children's age ranged between 1 and 59 months only.

The authors concluded by stating that "The Mapleson D CPAP system, in our opinion, is a useful and safe alternative to more complex and expensive noninvasive CPAP and bi-level positive airway pressure (BiPAP) weaning from MV in infants." It is not clear how the authors came to such a conclusion as they have not compared any other CPAP/BiPAP delivery system in the present study. This is of special importance as the current study revealed a much higher extubation failure rate (26%) as compared to earlier studies on spontaneous breathing trial.[2,3]

Table 1 depicts that the mean respiratory rate, heart rate, oxygen saturation (SpO_2), systolic blood pressure (SBP), and diastolic blood pressure (DBP) at baseline CMV (Continuous mandatory ventilation) and 2 h post-NT CPAP and 2 h postextubation did not differ significantly. However, if we compare the mean SpO_2, SBP, and DBP at baseline CMV with 2 h postextubation, they are found to be statistically significant (P = 0.01, 0.00, and 0.00, respectively).

The mean age of the children is stated to be 34 ± 45 months. Therefore, the mean ± 2 standard deviation for age becomes -56 to 124 months, but age cannot be a negative value! A similar type of data is also found in Table 2 (time Nasopharyngeal (NT) spontaneous ventilation, time Nasotracheal (NF) spontaneous ventilation, time MV). The reason seems to be that the aforementioned data do not have normal distribution (with the presence of outliers) in the given population. In such a case, it would have been better if authors presented these data in median ± interquartile range format. The numbers presented in the MV >48 h and <48 h category in both the extubation failure and extubation success groups also seem to be incorrect.

Table 1: Respiratory rate, heart rate, oxygen saturation, systolic blood pressure and diastolic blood pressure during the study

	Baseline CMV	2 h post-NT CPAP	2 h post-extubation	*P*
RR (bpm)	34±16	41±8	38±18	0.09
HR (bpm)	145±31	147±9	142±12	0.12
SpO_2 (%)	96±6	92±12	91±13	0.13
SBP (mmHg)	84±9	89±12	79±7	0.08
DBP (mmHg)	58±9	61±5	53±9	0.09

MV: Mechanical ventilation, RR: Respiratory rate, HR: Heart rate, SpO_2: Oxygen saturation, SBP: Systolic blood pressure, DBP: Diastolic blood pressure, CMV: Continuous mandatory ventilation, CPAP: Continuous positive airway pressure, NT: Nasotracheal

Table 2: Characteristics between extubation failure group and extubation success group

	Extubation failure (*n*=13)	Extubation success (*n*=37)	*P*
Age (months)	15.17±14.3	41.18±51.64	0.004
Weight (kg)	8.57±5.61	13.13±10.21	0.048
MV >48 h/MV <48 h	19/2	13/12	-
Time NT spontaneous ventilation (h)	13.09±14	45.12±58.30	0.36
Time NF spontaneous ventilation (h)	3.09±7.55	13.24±18.64	0.29
Time MV (days)	8±3.9	12±8.4	0.006

MV: Mechanical ventilation, NF: Nasopharyngeal, NT: Nasotracheal

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

Anirban Mandal, Puneet Kaur Sahi

Department of Pediatrics, Sitaram Bhartia Institute of Science and Research, New Delhi, India
E-mail: anirban.nrs@gmail.com

REFERENCES

1. Palomero-Rodríguez MA, de Arteaga HC, Báez YL, de Vicente Sánchez J, Carretero PS, Conde PS, *et al*. Evaluation of a Mapleson D CPAP system for weaning of mechanical ventilation in pediatric patients. Lung India 2016;33:517-21.
2. Farias JA, Alía I, Esteban A, Golubicki AN, Olazarri FA. Weaning from mechanical ventilation in pediatric intensive care patients. Intensive Care Med 1998;24:1070-5.
3. Farias JA, Retta A, Alía I, Olazarri F, Esteban A, Golubicki A, *et al*. A comparison of two methods to perform a breathing trial before extubation in pediatric intensive care patients. Intensive Care Med 2001;27:1649-54.

Access this article online

Quick Response Code:

Website: www.lungindia.com

DOI: 10.4103/0970-2113.201308

How to cite this article: Mandal A, Sahi PK. Mapleson D continuous positive airway pressure system for weaning of mechanical ventilation in pediatric patients. Lung India 2017;34:215-6.