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LETTER TO THE EDITOR

The Safety of Home High-Flow Nasal Cannula Therapy in Children with Congenital Heart Disease and Miscellaneous Respiratory Problems

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Dear the editor,

We thank Dr. Alibrahim for his interest in our recent manuscript which has shown a case series of 5 children with congenital heart disease requiring home high flow nasal cannula (HFNC) therapy [1]. Long-term home ventilation minimizes disruptions to the child's development and family life, prevents dependence on institutions, avoids nosocomial infection, frees beds in hospital, and reduces healthcare costs [2]. Home HFNC therapy is expected to play an important role in improving child healthcare.

We performed home HFNC in a patient with trisomy 18 and ventricular septal defect who presented central hypopnea and upper airway obstruction (case 2). As Dr. Alibrahim pointed out, it is controversial whether home HFNC should be applied among children with compromised airway problems, occasionally observed in individuals with trisomy 18. As our institutional strategy, we observed clinical condition on ward for several days to confirm the feasibility and safety of home HFNC in all patients who applied home HFNC. These observations would be not only guarantees of the safety but also reassurance for their family.

Dr. Alibrahim recommended monitoring tools, such as transcutaneous partial pressure of carbon dioxide ($TcPO_2$) or polysomnography, to prevent acute hypoventilation events. These tools are absolutely useful when non-invasive ventilations including HFNC are introduced [3]. However, monitoring using $TcPO_2$ may be occasionally unstable among small babies. Our study consisted of children with body weight varying from 3.1 to 11.4 kg. Thereby, we preferred systemic oxygen saturation by a pulse oximeter rather than $TcPCO_2$ or polysomnography.

Finally, Dr. Alibrahim suggested the potential escalation from NFHC to continuous positive airway pressure therapy (CPAP). We absolutely agree with him. If respiratory failure develops on home NFNC therapy, non-invasive ventilation therapy should be escalated without delay. In our study, there was no patient in whom respiratory failure was deteriorated during the study period.

Our study consisted of too small number of patients to conclude the safety of home HFNC therapy. However, our clinical experience suggested the potential advantage of home HFNC therapy among children with congenital heart disease and miscellaneous respiratory problems.

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Declarations

Conflict of interest The authors declare no competing interests.

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