International Journal of Scientific Reports
Ahtsham A et al. Int J Sci Rep. 2025 Jul;11(7):265-265
http://www.sci-rep.com
pISSN 2454-2156 | eISSN 2454-2164

DOI: https://dx.doi.org/10.18203/issn.2454-2156.IntJSciRep20251782

Letter to the Editor

Reconsidering milrinone as a primary treatment for neonatal pulmonary hypertension: an alternative to inhaled nitric oxide in resource-limited Asian settings

Sir,

Neonatal pulmonary hypertension is a commonly encountered condition with underlying low systemic blood pressure and reduced cardiac output secondary to right ventricular overload and myocardial dysfunction.[1] Research indicates a high incidence of this condition, occurring in 0.5 to 7 neonates per 1000 live births, with a mortality rate of 4-33%, underscoring the need for early diagnosis and effective management.

The standard treatment protocols for persistent pulmonary hypertension of the newborn (PPHN) involve the use of inhaled nitric oxide (iNO) as the first-line therapy. However, the unavailability of iNO in developing countries necessitates the exploration of alternative therapies. A randomized clinical trial conducted in Iran demonstrated that milrinone is an equally effective treatment for PPHN, with both inhaled and infused milrinone showing comparable benefits and minimal adverse effects.[2]

A case report by Tzialla et al highlights improved outcomes in neonatal pulmonary hypertension when intravenous milrinone was used as an adjunct to iNO in cases resistant to iNO alone.[3] Milrinone inhibits phosphodiesterase-3, thereby improving pulmonary hemodynamics through its inotropic and lusitropic effects. Its use in neonates with pulmonary hypertension has been associated with significant elevation in PaO_2, reduction of oxygen index, and decreased reliance on iNO. Echocardiographic findings further reveal lower pulmonary artery pressure, improved right and left ventricular output, and reduced right-to-left shunting.[4]

Implementing milrinone as the primary treatment modality could serve as a cost-effective strategy, reducing iNO demand and hospital stay durations.[5] Resource-limited countries could significantly benefit from using milrinone alone or as an adjunct to iNO, offering both short- and long-term advantages for patients and the healthcare system.[6]

Considering the high cost and prolonged hospital stay associated with iNO, I urge higher authorities to promote the use of milrinone in PPHN treatment and conduct further studies to establish its role as a primary therapy, particularly in regions with limited iNO access. This shift could improve patient outcomes while alleviating the financial burden on families and healthcare institutions.

Ashir Ahtsham, Nabeel Ahmad*

Lahore General Hospital, Lahore, Pakistan

***Correspondence to**
Dr. Nabeel Ahmad,
E-mail: nabeelahmad921@gmail.com

REFERENCES

1. Qasim A, Jain SK. Milrinone Use in Persistent Pulmonary Hypertension of the Newborn. Neo Rev. 2020;21(3):e165-78.
2. Choobdar FA, Shahhosseini P, Vahedi Z, Khosravi N, Khalesi N, Ghassemzadeh M. Comparison of the efficacy of inhaled versus infused milrinone in the management of persistent pulmonary hypertension of the newborn in resource-limited settings: A randomized clinical trial. Pediatr Pulmonol. 2023;58(7):2132-9.
3. Tzialla C, Cerbo RM, Perotti G, Stronati M. Persistent pulmonary hypertension of the newborn refractory to inhaled nitric oxide-treated with milrinone: a case report. Turk J Pediatr 2010;52:78-80.
4. McNamara PJ, Shivananda SP, Sahni M, Freeman D, Taddio A. Pharmacology of Milrinone in Neonates With Persistent Pulmonary Hypertension of the Newborn and Suboptimal Response to Inhaled Nitric Oxide. Pediatr Crit Care Med. 2013;14(1).
5. Fei Q, Pan J, Zhang F, Lin Y, Yuan T. Comparison of Different Treatments of Persistent Pulmonary Hypertension of the Newborn: A Systematic Review and Network Meta-Analysis. Crit Care Med. 2024;52(6).
6. El-Khuffash A, McNamara PJ, Breatnach C, Bussmann N, Smith A, Feeney O, et al. The use of milrinone in neonates with persistent pulmonary hypertension of the newborn - a randomised controlled trial pilot study (MINT 1): study protocol and review of literature. Matern Health Neonatol Perinatol. 2018;4(1):24.

Cite this article as: Ahtsham A, Ahmad N. Attitudes and impediments of the implementation of clinical pharmacy services and pharmaceutical care in Ethiopia: a systematic review. Int J Sci Rep 2025;11(7):265-5.