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Case Report

Paediatrics Section

Pulmonary Hemorrhage (PH) in Extremely Low Birth Weight (ELBW) Infants: Successful Treatment with Surfactant

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ABSTRACT

We report a case of an extremely low birth weight (ELBW) infant presenting with pulmonary hemorrhage (PH) in which we have given surfactant after an acute episode of bleeding with severe intractable hypoxemia. Surfactant replacement therapy showed improvement in Mean Airway Pressure (MAP) and oxygenation indices. Our case suggests that surfactant replacement therapy is useful in PH.

Keywords: Conventional ventilation, Hypoxia, Preterm

CASE REPORT

A preterm male neonate 27-week-gestation and birth weight of 680 grams was admitted in neonatal intensive care unit with grade IV respiratory distress syndrome (RDS) was ventilated and given surfactant treatment. RDS, Patent ductus arteriosus, Neonatal jaundice and sepsis complicated the initial course. On day 20th of life, the neonate developed profuse PH. We noticed fresh blood in the endotracheal tube associated with desaturation (SpO2 74%) and a Chest X-Ray compatible with PH [Table/Fig-1]. The infant needed blood transfusion because of anemia (Hb 85 g/L). Coagulation tests were normal. After intubation, a second episode of PH occurred with desaturation (SpO2 60%) and increased oxygen requirement (FiO2 1.0) leading to increase in MAP up to 15 cm H_2O on conventional ventilation. Despite high settings on conventional ventilation oxygen saturation remained poor (SO2 50-60%). In view of high FiO2 (1.0) requirements and high MAP (15 cm H_2O) decision was taken to give a trial of surfactant therapy. Surfactant (Curosurf, Chiesi farmaceutici S.P.A., Parma, Italy, 200 mg/kg) was given as a bolus. Clinical and radiological improvement [Table/Fig-2] was noted after 24 hr of surfactant therapy. Baby was successfully extubated after 48 hr of surfactant therapy, on day 23rd of life.

[Table/Fig-1]: Pre surfactant X-ray

[Table/Fig-2]: Post surfactant x-ray

DISCUSSION

PH is a life threatening condition occurring to 1-12/1000 live births, with rates increasing to 50/1000 live births in risk groups, such as prematurity, IUGR, and/or sepsis [1]. Smaller gestational age, lower birth weight, lower Apgar scores at one and five min, severe RDS (grades 3 or 4), and use of surfactant in very low birth weight infants at greater risk of PH [2]. Different approaches have been proposed for the management of PH in newborn infants, including high airway pressures during mechanical ventilation high frequency oscillation [3], ECMO [4], administration of recombinant activated Factor VII [5] and surfactant replacement therapy [6].

PH has been effectively managed using surfactant instillation, including in those infants who have previously been treated with surfactant [3-5]. Pandit et al., [7] showed improvement in oxygen indices after six hours of surfactant replacement therapy in 15 neonates with PH.

Amizuka et al., [8] treated 26 out of 27 neonates with PH occurring at 1.5 h after birth with surfactant. Treatment was at 3.0 h after the onset of PH. A good response to exogenous surfactant was seen in 82% of cases.

In majority of case studies [7-9] surfactant was given as a treatment

of pulmonary hemorrhage in first week of life. However, our case presented with pulmonary hemorrhage on day 20th of life and responded to surfactant therapy.

CONCLUSION

Smaller gestational age, lower birth weight, lower Apgar scores at one and five min, severe respiratory distress syndrome (grades 3 or 4), and use of surfactant place very low birth weight infants at greater risk of PH. Surfactant replacement therapy is useful in treatment of massive PH. Further randomized controlled trial would be useful for identification of potential benefit

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