

Abstract

Introduction: Respiratory distress syndrome is the most common cause of respiratory failure, which causes significant morbidity and mortality in premature infants. This disease occurs due to the lack of pulmonary surfactant production, and for this reason, artificial surfactants are considered as an effective treatment for this disease. The vital role of surfactants in reducing oxygen consumption and reducing the use of mechanical ventilation and its complications has been proven, but its more effective type is still not known. The present study was designed with the aim of analyzing the cost effectiveness of Braksurf compared to Bles in the treatment of respiratory distress syndrome in premature infants in order to help policy makers, health service providers and other stakeholders for choosing the right drug, increasing efficiency and optimal use of resources.

Methods: This study is a retrospective study and from the category of economic evaluation studies, which is a cost-effectiveness analysis on two groups of 88 premature infants with respiratory distress syndrome, who were treated with Braksurf or Bles surfactant in the neonatal intensive care unit of Afzalipur Medical Education Center Kerman from May 20, 2020 to October 23, 2022. The data were extracted using 2 researcher-made forms, including Infants' demographic information and cost information were extracted. The study model was done as a decision tree in the TreeAge software, and after entering the data into this software, the ratio of average cost effectiveness and incremental cost effectiveness was obtained, and the sensitivity analysis of costs and consequences using basic sensitivity analysis methods (tornado chart, one-way and two-way sensitivity analysis) and then probabilistic sensitivity analysis was performed by using the cost-effectiveness acceptability curve

diagram.

Results: The frequency of pulmonary hemorrhage and pneumothorax was higher in the Braksurf group than in the Bles group with insignificant statistical difference. The frequency of death was higher in the Bles group with insignificant statistical difference. The number of days requiring mechanical ventilation with insignificant statistical difference and the number of days of hospital stay with significant statistical difference were higher in the Braksurf group. The average total cost and separate costs were higher in the Braksurf group than in the Bles group. Braksurf with 1.45 less deaths and an incremental effectiveness cost of 85504799 Rials, which is much less than the expected threshold, became cost effective strategy. But with 4.82 days length of stay and 0.92 days length of mechanical ventilation longer, compared to Bles became a defeated strategy.

The results of probabilistic sensitivity analysis showed that Bles was the dominant strategy in "death" consequences with a probability of 82%, in "duration of hospital stay" with a probability of 80% and in "duration of mechanical ventilation" with a probability of 83%. It was found that with the change in the willingness to pay, the effectiveness had very minor changes.

Conclusion : The findings of the this study showed that Bles is more cost effective than Braksurf and this shows that although the foreign drug imposes more costs for supply of drug, but by controlling and reducing the complications of the disease and timely treatment, It creates lower secondary costs and is generally more affordable.

Keywords : Cost Effectiveness Analysis, Neonatal Respiratory Distress Syndrome, Preterm Infant, Braksurf, Bles



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