



Role of Exogenous Lung Surfactants in Therapy of ARDS

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ABSTRACT: Lung surfactants are made of natural complexes of phospholipids and proteins that are present at the air–liquid interface of lungs to lower the surface tension. This review discusses the clinical studies of exogenous surfactant therapy for acute lung injury (ALI) or the acute respiratory distress syndrome (ARDS) in children and adults. While therapeutic use of surfactant in ALI outside of the neonatal period enjoys recognition, controlled clinical studies have, so far, been highly unsuccessful in adults. Surfactant drugs currently approved for treatment of ARDS include animal-derived natural surfactants that contain surfactant lipids and active hydrophobic surfactant proteins (SP-B and SP-C), and several synthetic exogenous surfactants. The majority of surfactant drugs studied to date contain either no SP-B (eg. Colfosceril palmitate or Exosurf-synthetic surfactant) or minimal SP-B (eg. Beractant or Survanta-natural surfactant). Synthetic lung surfactants have advantages over natural surfactants in terms of purity, production, and economy. They are also free from the risk of pathogens and do not involve any ethical issues related to religious sentiments affecting bovine or porcine surfactants. However, natural surfactants have proved to be more successful since they have shown more rapid improvement in oxygenation and a decline in the risk of mortality in clinical studies. Moreover, it is seen that the acute response to surfactant therapy depends on the composition of the exogenous surfactant (modified natural surfactants are generally more effective than protein-free synthetic surfactants), timing of treatment (treatment at an early stage of the disease is better), and mode of delivery (rapid instillation via a tracheal tube leads to more uniform distribution and is more effective than slow airway infusion). Thus, further study and development of more effective pharmaceutical surfactants offer assurance that exogenous surfactants will find a successful place in our line of treatment of ALI/ARDS in the future. © 2016 iGlobal Research and Publishing Foundation. All rights reserved.

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