

Surfactant supplement for adult respiratory distress

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1992 Fiscal Year Final Research Report Summary

Surfactant supplement for adult respiratory distress

Research Project

Project/Area Number

02454352

Research Category

Grant-in-Aid for General Scientific Research (B)

Allocation Type

Single-year Grants

Research Field

麻醉学

Research Institution

Kanazawa University

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Keywords

ARDS / Surfactant / Respiratory Failure / Lung Edema / Supplement / Lung Compliance / Hypoxemia

Research Abstract

Pathological process of adult respiratory distress syndrome (ARDS) is largely unknown with 50-70% mortality.

(1) Investigation on the pathological process: An exogenous surfactant was mixed with lung edema fluid sampled from ARDS patients, and administered to the lungs of immature newborn rabbits. When the edema fluid protein-to-surfactant ratio increased from 5.6 to 11.2, the dynamic lung compliance of the animals decreased from 1.08 (mean) to 0.43 ml/cmH₂O/kg (P < 0.05). We conclude that a cause of respiratory failure in ARDS is inactivation of pulmonary surfactant by lung edema that appears during the course.

(2) Treatment of ARDS by surfactant supplement: Respiratory failure induced by administration of E. Coli endotoxin in rats was largely reversed by supplementation of an exogenous surfactant (100 mg/kg); PaO₂ improved from 106 mmHg (mean) to above 400 mmHg (P < 0.05), and diffuse infiltrates in the chest radiogram disappeared. We conclude that surfactant supplementation can reverse the respiratory failure in ARDS.

(3) Artificial surfactant for the supplement therapy: Dipalmitoyl lecithin, unsaturated lecithin (u-L), phosphatidylglycerol and the hydrophobic proteins of

porcine surfactant were mixed with various ratios. Dynamic lung compliance of the immature newborn rabbits receiving the mixture consists of all the components was 1.24 ml/cmH₂O/kg (mean), but the value receiving the mixture without u-L was 0.79 ml/cmH₂O/kg (P < 0.05). We conclude that u-L is an important factor for surfactant activity.

Research Products (20 results)

All Other

All Publications (20 results)

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