成人呼吸窮迫症候群の早期診断とサーファクタントによる不可逆期への移行阻止

メタデータ	言語: Japanese
	出版者:
	公開日: 2022-06-03
	キーワード (Ja):
	キーワード (En):
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URL	https://doi.org/10.24517/00066226

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1997 Fiscal Year Final Research Report Summary

ARDS : early diagnosis & prevention of irreversible change by surfactant therapy

Research Project

Project/Area Number

07457353

Research Category

Grant-in-Aid for Scientific Research (B)

Allocation Type

Single-year Grants

Section

一般

Research Field

Anesthesiology/Resuscitation studies

Research Institution

Kanazawa University

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Project Period (FY)

1995 – 1997

Keywords

ARDS / surfactant protein / replacement therapy / endotoxin / elastase / surface tension / vascular resistance / rat

Research Abstract

(1) Determination of the reversible period in adult (acute) respiratory distress syndrome (ARDS) : In experiment to administrate endotoxin, elastase, lysolecithin, and anti-surfactant protein B monoclonal antibody in rats and rabbits, the ARDS-like symptom could be reversed by surfactant replacement until 6 hours after the arterial oxygen pressure (PaO_2) started to decrease. Therefore, 6 hours after the onset of the symptom was thought to be the reversible period. Formation of hyaline membrane, however, was noted in the alveoli even at the reversible period, uggesting that some cares should be taken to prevent the organic changes as early as possible.
(2) Replacement method of surfactant and development of artificial surfactant : In rats, inhalation of an aerosolized surfactant (modified natural surfactant, Surfactant CK) reversed symptoms of ARDS-like lung injury which was induced by administration of endotoxin. By this procedure, the organic change of the lung tissue, an irreversible damage, could be postponed at least for 6 hours. In addition, an artificial surfactant which was prepared with synthetic dipalmitoyl-phosphatidylcholine, phosphatidylglycerol and dioleoylphosphatidylcholine (60 : 20 : 20) plus surfactant protein B (0.7%) and C (1.4%) exhibited the same effects with Surfactant CK.
(3) Relation between condition of pulmonary surfactant and vascular resistance : We found that inactivation of pulmonary surfactant induces dilatation of the capillary vessels of the alveoli. We think that this is an important finding to explain the mechanism of hypoxemia in ARDS.
(4) Early diagnosis of ARDS : We have obtained some findings that surface tension values of the liquid aspirated from the trachea may by useful for early diagnosis of ARDS.

Research Products (49 results)

All Other

All Publications (49 results)

[Publications] Tashiro, Katsumi: "Surfactant replacement reverses respiratory failure induced by intratracheal endotoxin in rats." Critical Care Medicine. 23. 149-156 (1995)

[Publications] Kita, Yoshito: "Status asthmatics complicated by atelectasis in a child." American Journal of Emergency Medicine. 13. 164-167 (1995)

[Publications] Kobayashi, Tsutomu: "Experimental experiences with exogeneous surfactant in animals with adult respiratory distress syndrome." Applied Cardiopulmonary Pathophysiology. 5. 71-72 (1995)

[Publications] Tashiro, Katsumi: "Surfactant replacement therapyfor acute lung injury caused by inhalation of aerosolized water-repellent in rats." Applied Cardiopulmonary Pathophysiology. 5. 119-120 (1995)

[Publications] 山田, 圭輔: "エンドトキシンにより呼吸不全を呈したラットに対するサーファクタント吸入療法" 金沢大学十全医学会雑誌. 104. 26-35 (1995)

[Publications] 早稲田, 祐子: "換気量増加に必要なサーファクタント関連蛋白の種類および量" 金沢大学十全医学会雑誌. 104. 311-321 (1995)

[Publications] 早稲田, 祐子: "再構築サーファクタントを補充した肺における換気量と静的肺圧量曲線の比較" 日本界面医学会雑誌. 26. 48-53 (1995)

[Publications] Kobayashi, Tsutomu: "Disparity between tidal and static volumes of immature lungs treatedwith reconstituted surfactants." Journal of Applied Physiology. 80. 62-68 (1996)

[Publications] Tashiro, Katsumi: "Aerosolized and instilled surfactant therapies for acute lung injurycaused by intratracheal endotoxin in rats." Critical Care Medicine. 24. 488-494 (1996)

[Publications] Taniguchi, Takumi: "Lidocaine attenuated the hypotensive and inflammatory responses to endotoxemia in rabbits." Critical Care Medicine. 24. 642-646 (1996)

[Publications] Tashiro, Katsumi: "Surfactant replacement in animals with adult respiratory distress syndrome-like injuries related to its clinical application." Journal of Japanese Medical Society for Biological Interface. 26. 139-150 (1996)

[Publications] 高橋, 麗子: "サーファクタントの生理活性に必要な脂質の種類の検討" 金沢大学十全医学会雑誌. 105. 71-80 (1996)

[Publications] 田代, 勝己: "エンドトキシンにより急性呼吸不全を呈したラットに対する終末呼気陽圧とサーファクタント補充療法の効果" 金沢大学十全医学会雑誌. 105. 587-595 (1996)

[Publications] 長瀬, 典子: "エラスターゼの気管内投与により急性呼吸不全を呈したラットに対する肺サーファクタント補充療法" 日本界面医学会誌. 27. 74-79 (1996)

[Publications] 松本, 豊: "リゾフォスファチジルコリンの気管内投与による成熟ウサギ胎仔の急性肺障害" 日本界面医学会誌. 27. 87-92 (1996)

[Publications] 早稲田, 祐子: "換気量増加に必要なサーファクタント・アポ蛋白の種類" 日本界面医学会誌. 27. 93-98 (1996)

[Publications] 田代, 勝己: "薬物投与ルートとしての気管:サーファクタント吸入の理論と実際" ICUとCCU. 20. 113-119 (1996)

[Publications] Kobayashi, Tsutomu: "Effects of surfactant protein SP-B and SP-C on dynamic and static mechanics of immature lungs." Journal of Applied Physiology. 83. 1849-1856 (1997)

[Publications] Kurashima, K.: "Surface activity of sputum from acute asthmatic patients." American Journal of Respiratory and Critical Care Medicine. 155. 1254-1259 (1997)

[Publications] Grossmann, G: "Pathophysiology of neonatal lung injury induced by monoclonal antibody to surfactant protein B." Journal of Applied Physiology. 82. 2003-2010 (1997)

[Publications] Tashiro, Katsumi: "Mechanism of acute lung injurycaused by inhalation of fabric protector and effect of surfactant replacement." Intensive Care Medicine. 24. 55-60 (1998)

[Publications] 松本 豊: "分離ラット肺の灌流圧に及ぼす肺洗浄とサーファクタント補充の影響" 日本界面医学会誌. 28. 46-51 (1997)

[Publications] 我喜谷 徹: "高温の水蒸気を吸入させた急性呼吸不全に対するサーファクタント補充療法" 金沢大学十全医学会雑誌. 106. 420-427 (1997)

[Publications] 小林 勉: "加工天然サーファクタントの活性に及ぼすpHの影響" 日本界面医学会誌. 28. 115-117 (1997)

[Publications] 松本 豊: "灌流ラット肺における肺法表面張力と肺灌流圧" 日本界面医学会誌. 28. 118-120 (1997)

[Publications] 田代 勝己: "肺サーファクタント補充療法の現況" 医学のあゆみ. 180. 384-385 (1997)

[Publications] 柴田 恵三: "救急医療の臨床" 医薬ジャーナル, 925 (1996)

[Publications] Tashiro, K.et al: "Surfactant replacement reverses respiratory failure induced by intratracheal endotoxin in rats." Crit.Care Med. 23. 149-156 (1995)

[Publications] Kita, Y.et al: "Status asthmaticus complicated by atelectasis in a child." Am J.Emerg.Med.13. 164-167 (1995)

[Publications] Kobayashi, T.et al: "Experimental experinances with exogenous surfactant in animals with adult respiratory distress syndrome (ARDS)." Appl.Cardiopulmonary Pathophysiol.5 (Suppl). 71-72 (1995)

[Publications] Tashiro, K.et.al: "Surfactant replacement therapy for acute lung injury caused by inhalation of aerosolized water-repellent in rats." Appl.Cardiopulmonary Pathophysiol.5 (Suppl). 119-120 (1995)

[Publications] Yamada, K: "Effect of inhalation of aerosolized surfactant onrespiratory failure induced by intratracheal endotoxin in rats." J.Juzen Med.Soc.104. 26-35 (1995)

[Publications] Waseda, Y: "Components and amount of surfactant-associated protein necessary to increase tidal volume." J.Juzen Med.Soc.104. 311-321 (1995)

[Publications] Kobayashi, T.et al: "Disparity between tidal and static volumes of immature lungs treated with reconstituted surfactants." J.Appl.Physiol.80. 62-68 (1996)

[Publications] Tashiro, K.et al: "Aerosolized and instilled surfactant therapies-for acute lung injury caused byu intratracheal endotoxin in rats." Crit.Care Med.24. 488-494 (1996)

[Publications] Taniguchi, T.et al: "Lidocaine attenuates the hypotensive and inflammatory responses to endotoxemia in rabbits." Crit.Care Med.24. 642-646 (1996)

[Publications] Waseda, Y.et al: "Tidal volume versus static pressure-volume relationship of the lung treated with reconstituted surfactant." J.Jpn.Med.Soc.Biol.Interface. 26. 48-53 (1995)

[Publications] Takahashi, R: "Lipid components necessary to increase the activity of pulmonary surfactant." J.Juzen Med.Soc.105. 71-80 (1996)

[Publications] Tashiro, K: "Effects of positive end-expiratory pressure and surfactant replacement on respiratory failure caused by" J.Juzen Med.Soc.105. 587-595 (1996)

[Publications] Nagase, N.et al: "Surfactant replacement on respiratory failure induced by intratracheal elastase injection in rats." J.Jpn.Med.Soc.Biol.Interface. 27. 74-79 (1996)

[Publications] Matsumoto, Y.et al: "Intratracheal administration of lysophospha-tidylcholine causes acute lung injury in mature mewborn rabbits." J.Jpn.Med.Soc.Biol.Interface. 27. 87-92 (1996)

[Publications] Wseda, Y.et al: "Components of surfactant-associated protein necessary to increase the tidal volume." J.Jpn.Med.Soc.Biol.Interface. 27. 93-98 (1996)

[Publications] Kobayashi, T.et al: "Effects of surfactant protein SP-B and SP-C on dynamic and static mechanics of immature lungs." J.Appl.Physiol.83. 1849-1856 (1997)

[Publications] Kurashima, K.et al: "Surface activity of sputum from acute asthamtic patients." Am.J.Respir.Crit.Care Med.155. 1254-1259 (1997)

[Publications] Grossmann, G.et al: "Pathophysiology of neonatal lung injury induced by monoclonal antibody to surfactant protein B." J.Appl.Physiol.82. 2003-2010 (1997)

[Publications] Tashiro, K.et al: "Mechanism of acute lung injury caused by inhalation of fabric protector and effect of surfactant replacement." Intensive Care Med.24. 55-60 (1998)

[Publications] Matsumoto, Y.et al: "Effets of alveolar lavage and surfactant replacement on perfusion pressure in isolated rat lungs." J.Jpn.Med.Soc.Biol.Interface. 28. 46-52 (1997)

[Publications] Gakiya, T: "Surfactant replacement for respiratory failure induced by inhalation of high temperature vapor in rats." J.Juzen Med.Soc. 106. 420-427 (1997)

[Publications] Matsumoto, Y.et al: "Alveolar surface tension versus pulmonary perfusion pressure relationship in perfused rat lungs." J.Jpn.Med.Soc.Biol.Interface. 28. 118-220 (1997)

URL: https://kaken.nii.ac.jp/report/KAKENHI-PROJECT-07457353/074573531997kenkyu_seika_hokoku_

Published: 1999-03-15