

POSTER PRESENTATION

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0854. Metabolomic changes by mass spectrometry in lung tissue from septic rats with mechanical ventilation-induced lung injury

Y Rojas^{1,2*}, S Naz³, N Nin^{4,5}, A García³, A Ferruelo^{1,2}, L Martínez-Caro^{1,2}, M de Paula^{1,6}, C Barbas³, JA Lorente^{1,2,7}

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Objective

To identify metabolomic changes in lung tissue associated with lung injury induced by mechanical ventilation (VILI) in animals with sepsis, using for the first time a global unbiased metabolomic fingerprinting approach.

Methods

Rats received cecal-ligation and puncture (CLP) or sham operation, and 24 h later underwent mechanical ventilation for 2.5 h with either $V_T=9$ ml/kg, positive end-expiratory pressure (PEEP)=0 cm H₂O (n=9 and n=12, without and with CLP, respectively); or $V_T=25$ ml/kg, PEEP=5 cm H₂O (n=13 and n=12, without and with CLP, respectively). Lung tissue samples were obtained and analyzed by non-targeted global fingerprinting approach for lung tissue analysis, applying multiple complementary analytical techniques, including liquid chromatography-mass spectrometry (MS), gas chromatography-MS, and capillary electrophoresis-MS. We followed the Principles of Laboratory Animal Care (2010/63/UE 22-09, RD 53/2013 BOE 1-02, ley 32/2007 BOE 7-11).

Results

Metabolomic changes characteristic of sepsis and VILI were identified. Lung tissue samples from septic rats with VILI were characterized by a specific metabolomic profile as compared to samples from septic rats without VILI. Metabolomic changes indicated increased oxidative stress, and changes in purine, energy, carnitine, aminoacid, urea cycle, vitamins, collagen, ceramide-sphingomyelin and phospholipid metabolism.

Conclusion

A particular metabolomic profile can be identified in lung tissue from septic rats with lung injury induced by mechanical ventilation.

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Authors' details

¹Centro de Investigación Biomédica en Red de Enfermedades Respiratorias (CIBERES), Getafe, Spain. ²Hospital Universitario de Getafe, Intensive Care Service, Getafe, Spain. ³Facultad de Farmacia, Universidad CEU San Pablo, Centro de Metabolómica y Bioanálisis (CEMBIO), Madrid, Spain. ⁴Hospital Español, Intensive Care Service, Montevideo, Uruguay. ⁵Hospital de Torrejón, Intensive Care Service, Madrid, Spain. ⁶Hospital Universitario de Getafe, Getafe, Spain. ⁷Universidad Europea de Madrid, Madrid, Spain.

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¹Centro de Investigación Biomédica en Red de Enfermedades Respiratorias (CIBERES), Getafe, Spain

Full list of author information is available at the end of the article