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Nitric oxide in ARDS

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Keywords

ARDS, nitric oxide

Context

ARDS is common in patients admitted to intensive care units. One mediator of ARDS could be iNOS, induced by cytokines such as tumor necrosis factor-a. It remains to be seen whether NO_x and nitrotyrosine levels can be used as markers of ARDS and whether NO end-products (nitrate and nitrite [NO_x])levels can be used prognostically. No efforts were made to determine either the antioxidant status of the patients or the levels of various cytokines. Perhaps a comprehensive study of various antioxidants, cytokines (including transforming growth factor and macrophage migration inhibitory factor), iNO and other free radicals is necessary to see whether any of these proteins is a useful prognostic marker for ARDS outcome.

Significant findings

Oxidant-mediated injury plays a significant role in acute respiratory distress syndrome (ARDS). Levels of nitric oxide (NO) and (NO_x) are increased in bronchoalveolar lavage (BAL) fluid from patients with ARDS. Alveolar macrophages (AMs) could be one source of NO. This study investigated three things: firstly, NO and NO_x levels before and after the onset of ARDS; secondly, the source of these products; and, finally, the relationship between NO_x and the outcome for patients with ARDS.

Comments

NO_x concentration in BAL fluid was significantly higher on days 1 and 3 after the onset of sepsis, trauma, or other clinical risk factors in patients at risk of developing ARDS; levels remained elevated throughout the course of ARDS. Patients who developed ARDS following sepsis had significantly

higher levels of NO_X than patients who developed it following exposure to trauma or other clinical risk factors. NO_X concentration in BAL fluid tended to be higher on day 3 and was significantly higher on day 7 in patients who subsequently died. Inducible NO synthase (iNOS) and nitrotyrosine were detected in AMs of patients both at risk of and with ARDS but not in AMs from BAL fluid from healthy volunteers. These results suggest that NO is an important factor in lung injury in ARDS and that high concentrations of NO are associated with higher mortality.

Methods

BAL, immunocytochemistry, measurement of NO_X using Griess reagent absorbance, ELISA

Additional information

References

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