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Therapeutic effects of anti-high mobility group box-1 monoclonal antibody for influenza A virus (H1N1) – Induced Pneumonia

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Background: Provision for the emergence of influenza pandemic is an urgent issue. The discovery of a novel anti-influenza therapeutic approach would increase the effectiveness of traditional virus-based strategies. High mobility group box-1 (HMGB1) plays an important role in triggering inflammatory responses in many types of diseases, including influenza.

Objective: This study was undertaken to evaluate therapeutic effects of anti-HMGB1 monoclonal antibody (mAb) for influenza-A virus (H1N1) – induced pneumonia.

Method: Influenza A pneumonia was induced in nine-week-old male C57BL/6 mice by inoculation with influenza virus A/Puerto Rico/8/34 (H1N1). Anti-HMGB1 mAb or control mAb was administered intravenously at 1, 24 and 48 hours after inoculation. Survival rate was analyzed. Lung lavage and pathological analysis were performed on days 3, 5, 7 and 10 after inoculation.

Result: Anti-HMGB1 mAb significantly improved the survival rate of H1N1-inoculated mice, although the treatment did not affect virus propagation in the lung. The treatment significantly attenuated the histological changes and neutrophil infiltration in the lung of H1N1-inoculated mice; these were associated with inhibition of HMGB1 and suppression of inflammatory cytokine/chemokine expression and oxidative stress enhancement.

Conclusion: Anti-HMGB1 mAb may provide a novel and effective pharmacological strategy for severe influenza virus infection in humans by reducing the inflammatory responses induced by HMGB1.

Biography

Nobuyuki Nosaka is a Young Physician Scientist who specialized in pediatric critical care. He has just completed his PhD this year from Okayama University, Japan. His research interests mainly include influenza, pneumonia.

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