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F. B. Plötz
H. van Vught
C. J. Heijnen

Ventilator-induced lung inflammation: is it always harmful?

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Sir: Recent experimental research has demonstrated that mechanical ventilation results in an inflammatory reaction in the lungs and that the degree of inflammation depends on the ventilatory strategy [1, 2]. Furthermore, it has been suggested that this inflammatory cell and mediator induced lung injury, known as biotrauma, may not be limited to the lungs but it may even initiate or propagate multiple organ dysfunction via spillover of inflammatory mediators from the lung into the circulation [3, 4]. In this regard, it has been suggested that novel therapies should aim at treating the iatrogenic inflammatory response in order to prevent the development of lung injury and multiple organ dysfunction in mechanically ventilated patients.

However, no clinical studies to date have addressed whether mechanical ventilation per se can lead to changes in the production of inflammatory mediators in the lung. Even more importantly, it remains unanswered if it is always necessary to mitigate this inflammatory response. Biotrauma implies that inflammation caused by mechanical ventilation is always deleterious for the lungs and that it is therefore necessary to mitigate this inflammatory response. However, we would like to propose that this is questionable. The experimental research on this issue so far has mainly concentrated on the role of pro-inflammatory mediators. High concentrations of pro-inflammatory mediators in the bronchoalveolar lavage fluid are associated with lung injury, analogous to that found in adult respiratory distress syndrome (ARDS). We think it is more realistic to assume that mechanical ventilation triggers a complex but well balanced sequelae of pro- and anti-inflammatory mediators aimed at achieving appropriate lung healing and restoring homeostasis. This adaptive inflammatory response does not primarily cause lung injury or multiple system organ failure (MSOF). Only one study has described the production of pro- as well as anti-inflammatory mediators in non-perfused isolated ventilated lungs [2]. These authors reported that the degree of pro- and anti-inflammation was dependent of the ventilator strategy. However, the question remained unresolved of whether this inflammatory response was harmful or beneficial for the process of natural lung healing. If a disturbance in the balance between pro- and anti-inflammation occurs, for example due to the presence of a persistent injurious ventilatory strategy, a deleterious inflammatory response may prevent satisfactory lung healing and lung injury, and possibly MSOF, may develop.

For clinical therapy it is of interest to prevent the development of an imbalance between pro- and anti-inflammation. If, however, novel therapies are applied during the adaptive inflammatory response, the clinician may artificially induce an imbalance between pro- and anti-inflammation. This may prevent natural lung adaptation and healing. Before novel therapies can be applied it will first be necessary to delineate precisely how and when the balance between pro- and anti-inflammation changes from beneficial to harmful [5]. Only at this stage will the interference of novel therapies in the inflammatory process prevent the development of lung injury and MSOF.

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F. B. Plötz (✉) · H. van Vught
Department of Pediatric Intensive Care,
Wilhelmina Children's Hospital,
P. O. Box 18009, 3501 CA Utrecht,
The Netherlands; Tel. + 31 30 2320911

C. J. Heijnen
Department of Immunology,
Wilhelmina Children's Hospital,
3501 CA Utrecht, The Netherlands

E. Villar
I. Mohammedi
S. Duperret
Y. Bouffard
P. Bouletreau

Community-acquired methicillin-resistant *Staphylococcus aureus* right-sided infective endocarditis in a non-addict patient with ventricular septal defect

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Sir: The majority of patients with right-sided infective endocarditis are intravenous drug abusers. Non-addictive patients usually have underlying cardiac diseases, most commonly congenital heart disease. However, endocarditis does not occur with the same frequency for every type of abnormality [1]. To our knowledge, we report the first case of community-acquired right-sided infective endocarditis due to methicillin-resistant Staphylococcus aureus (MRSA) in a non-addictive patient with ventricular septal defect (VSD).

A 49-year-old man was admitted to our ICU with asthenia, dyspnea and high fever. His past medical history included an asymptomatic VSD which had not required either surgical closure or recent hospitalization. Two weeks earlier, he had presented a 2-cm cutaneous abscess on the thorax which slowly resolved with repeated disinfection. At admission, his physical examination disclosed the following: temperature, 41.3 °C; BP, 170/50 mmHg; pulse, 150 beats per min; respiration, 35 breaths per min, SaO_2, 96 % with 12 l/min of nasal oxygenotherapy. Cardiac examination revealed a 4/6 pansystolic murmur along the left sternal border without radiation. Auscultation of the chest revealed crackles over the lower posterior lung fields. The patient was confused without localizing neurologic deficits. Laboratory investigations were as follows: elevation of creatininemia (170 μmol/l), ASAT (337 UI/l), ALAT (110 UI/l), free bilirubin (103 μmol/l) and WBC (13.8×10^3 per mm^3). His chest roentgenogram revealed multiple pulmonary infiltrates involving both lung fields. A computed tomography (CT) scan confirmed multiple septic embolies (Fig. 1 a). The ECG and an abdominal