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CORRESPONDENCE

Steroids and severe pneumonia. Ready for the winter? Discussion on "Corticosteroid treatment in critically ill patients with severe influenza pneumonia: a propensity score matching study"

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Dear Editor,

We read with great interest the article by Moreno et al. [1]. Steroids in infectious diseases are part of many current treatments (pneumococcal meningitides, tuberculous meningitides/pericarditis, pneumocystis jiroveci pneumonia) and growing evidence supports the use of methylprednisolone as adjuvant therapy of severe pneumonia with high inflammatory burden. Conversely, corticosteroids increase mortality in patients with influenza, and they should be avoided in case of its clinical suspicion (high fever/upper respiratory symptoms) or microbiological confirmation [polymerase chain reaction (PCR) on pharyngeal/nasal swab] [2].

The findings from Moreno et al. reinforce the clinical usefulness of this approach, raising two clinical doubts we would like to share with the authors.

First, what is the real clinical role of influenza PCR positivity in the setting of a suspected or confirmed severe bacterial pneumonia?

It is well know that a 'molecular scar' may persist for weeks in absence of active replication (the tuberculous genome has been identified in Egyptian mummies!) and flu may be only the first trigger for a following invading bacterial infection.

Second, how does one interpret the identification of 'minor' respiratory viruses when using multiplex probes?

In patients who underwent endotracheal intubation, the use of real-time multiplex PCR in bronchoalveolar lavage samples (BioFire FilmArray®Respiratory Panel) may show the presence of non-influenza viruses along with bacterial pathogens, thus addressing the real epidemiological relevance of viral co-infection in severe bacterial pneumonia [3].

We would be grateful if the authors would comment on the above issues in order to 'get ready' as much as possible for the upcoming winter season.

Reply from Dr Morano et al.

We read with interest the above letter from De Pascale et al. The authors found it difficult to put together two antagonist treatment options for patients with severe community-acquired pneumonia (sCAP). The answer to this question is straightforward though: *primum non nocere*.

Please let us explain why. Corticosteroids are the most potent anti-inflammatory drugs available and have been shown to carry some benefits in patients with CAP [4]. We have to remind to the authors that the vast majority of patients included in these studies are not critically ill ones with a low mortality rate. In ICU, sCAP has shown mortality rates that range from 30% to 50% if septic shock is present. Another important consideration is that many

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of the studies conducted found only differences in late treatment failure and radiographic progression but not in mortality [5].

Administration of corticosteroids has been found repeatedly to be associated with a worse outcome in critically ill patients with sCAP due to influenza [1]. We have to acknowledge that these results come from a non-randomized controlled trial (RCT); however, patients with influenza have been reported to have a phase of marked immunoparalysis and rationally adding an immunosuppressant might not be considered reasonable. Recently, influenza has been shown to be an independent risk factor for invasive pulmonary aspergillosis (IPA) [6]. IPA is a life-threatening disease affecting mainly immunocompromised hosts. As has also been published, steroids and IPA are frequent risk factors together in patients with influenza [7].

Therefore to 'get ready' for the upcoming winter season, starting antivirals early and ruling out influenza infection before starting with corticosteroids are in our opinion the most suitable recommendations to date.

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Compliance with ethical standards

Conflicts of interest
The authors declare that they have no competing interests.

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