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# Predictors for mechanical ventilation and short-term prognosis in patients with Guillain-Barré syndrome

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See related research by Wu et al., http://www.ccforum.com/content/19/1/310

Wu and colleagues retrospectively analyzed the clinical data of 541 patients who were diagnosed with Guillain-Barré syndrome (GBS) from 2003 to 2014, among whom 80 patients (14.8 %) required mechanical ventilation [1]. Via multivariate logistic regression analysis, independent predictors for mechanical ventilation and short-term prognosis in mechanically ventilated patients were identified [1]. This study was well designed and conducted. In-hospital infections were not mentioned in the study, however, which seems lacking for such a study given it is an important parameter.

We wonder whether the rate of in-hospital infections was simply not included in the analysis or whether it was proved not to be an independent predictor for mechanical ventilation after multivariate logistic regression analysis. Ali and colleagues [2] described a historical cohort of mechanically ventilated patients with GBS in a tertiary-care center. They found that ventilator-associated pneumonia was the most frequent complication and was associated with prolonged mechanical ventilation [2]. We are eager, therefore, to know about the incidence of ventilator-associated pneumonia and whether it is a predictor for poor short-term outcome. In addition, intravenous corticosteroids are not recommended for the treatment of GBS according to several international guidelines and we would like to know why corticosteroids were used on a large number of patients with GBS in the study by Wu and colleagues.

GBS typically occurs after an infectious disease, two-thirds of patients presenting with symptoms of a respiratory or gastrointestinal tract infection before its onset [3]. Wu and colleagues included antecedent infections as a parameter in their analysis; however, we are eager to know whether stratified analysis according to respiratory and gastrointestinal infections was performed.

## Authors' response

Xiujuan Wu, Kangding Liu and Hong-Liang Zhang

We appreciate Yang and Jia's comments on our study. As they mentioned, GBS is usually triggered by antecedent infections. In the retrospective study, however, stratified analysis was not performed to address whether different antecedent infections could serve as a predictor for mechanical ventilation and short-term prognosis. The overall incidence of in-hospital infections for the patients with GBS was approximately 19.6 % in our study. The incidence was 85.8 % in mechanically ventilated patients, most of which were ascribed to ventilator-associated pneumonia, and was significantly lower in those without respiratory assistance (11.4 %, $P < 0.01$). Thus, we did not include in-hospital infections in predicting mechanical ventilation due to their inherent causal relationship. This was also the case when we searched for predictors for short-term prognosis of patients who required mechanical ventilation. However, the poor short-term prognosis of mechanically ventilated patients might be related to ventilator-associated pneumonia, which may potentially increase the duration of mechanical ventilation [4].

As to the therapeutic values of corticosteroids in treating GBS, they were proved ineffective when administered alone [5]. Nevertheless, a study found that 76 % of patients who received intravenous immunoglobulin (IVIg) combined with corticosteroids improved by at least one grade on the GBS disability scale compared with 53 % patients in the IVIg-treated group [6]. The median time to regain unaided walking was also shorter in the combination therapy group [6]. Similar results were found when adjustments were made in a randomized double-blind, placebo-controlled and multicentre study [7]. Thus,

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intravenous corticosteroids as an add-on therapy have been used in the treatment of severe or protracted GBS cases [7]. However, we found that add-on use of intravenous corticosteroids was a risk factor for poor short-term prognosis in mechanically ventilated patients who were severely paralyzed. This might either be due to its harmful effects on denervated muscles or its inhibition of macrophage functions in the reparative and regenerative processes of the peripheral nerves [8] or be related to the increased incidence of in-hospital infections and hyperglycemia caused by intravenous use of corticosteroids [4, 5].

**Abbreviations**
GBS: Guillain-Barré syndrome; IVIg: intravenous immunoglobulin.

**Competing interests**
The authors declare that they have no competing interests.

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**References**

1. Wu X, Li C, Zhang B, Shen D, Li T, Liu K, et al. Predictors for mechanical ventilation and short-term prognosis in patients with Guillain-Barré syndrome. Crit Care. 2015;19:310.
2. Ali MI, Fernández-Pérez ER, Pendem S, Brown DR, Wijdicks EF, Gajic O. Mechanical ventilation in patients with Guillain-Barré syndrome. Respir Care. 2006;51:1403–7.
3. van den Berg B, Walgaard C, Drenthen J, Fokke C, Jacobs BC, van Doorn PA. Guillain-Barré syndrome: pathogenesis, diagnosis, treatment and prognosis. Nat Rev Neurol. 2014;10:469–82.
4. Saravu K, Preethi V, Kumar R, Guddattu V, Shastry AB, Mukhopadhyay C. Determinants of ventilator associated pneumonia and its impact on prognosis: a tertiary care experience. Indian J Crit Care Med. 2013;17:337–42.
5. Hughes RA, van Doorn PA. Corticosteroids for Guillain-Barré syndrome. Cochrane Database Syst Rev. 2012;8:CD001446.
6. The Dutch Guillain-Barré Study Group. Treatment of Guillain-Barré syndrome with high-dose globulins combined with methylprednisolone: a pilot study. Ann Neurol. 1994;35:749–52.
7. van Koningsveld R, Schmitz PI, Meché FG, Visser LH, Meulstee J, van Doorn PA, et al. Effect of methyprednisolone when added to standard treatment with intravenous immunoglobulin for Guillain-Barré syndrome: randomized trial. Lancet. 2004;363:192–6.
8. Hughes RA. Treatment of Guillain-Barré syndrome with corticosteroids: lack of benefit? Lancet. 2004;363:181–2.