Emergency Intubation for Respiratory Failure in Guillain-Barré Syndrome

Eelco F. M. Wijdicks, MD; Robert D. Henderson, FRACP; Robyn L. McClelland, PhD

Background: The consequences of emergency intubation in Guillain-Barré syndrome are not known.

Objective: To review data from patients admitted to the intensive care unit with recent diagnosis of Guillain-Barré syndrome and intubation for respiratory failure.

Design, Setting, and Patients: The database of patients with Guillain-Barré syndrome admitted to the intensive care units during the past 2 decades was reviewed. Emergency intubation was defined as need for ventilation in a patient with sudden dyspnea, cyanosis, or respiratory arrest. Outcome and pulmonary morbidity were assessed by comparing these patients with patients intubated electively.

Results: Six patients were intubated for acute respiratory distress and 1 patient for respiratory arrest. Thirty-six patients were intubated electively. Prolonged weaning was twice as common in the emergent group as in the elective group; a larger sample size might have demonstrated statistical significance. One patient with respiratory arrest developed marked anoxic encephalopathy; in all others, no differences were found in mortality, pulmonary morbidity, or duration of ventilatory assistance. None of the emergency intubations occurred in the last 15 years of the study.

Conclusions: Emergency intubation in Guillain-Barré syndrome is uncommon but, when associated with respiratory arrest, can lead to anoxic encephalopathy. Duration of ventilator use and pulmonary morbidity are not increased in these patients.

Arch Neurol. 2003;60:947-948

Background: The decision when to intubate patients with respiratory failure caused by Guillain-Barré syndrome (GBS) has often been discretionary. It requires a clinical choice between 2 extremes: premature intubation resulting in risk of tracheal and pulmonary injury, and watchful observation, which could end with emergency intubation. Our group recently identified several clinical factors that predict the need for assisted ventilation. These clinical features include oropharyngeal dysfunction and bifacial palsy. No clinical features have yet been identified that predicted the pattern of the respiratory decline. In addition, previous studies have suggested that emergency intubation increases pulmonary morbidity and poor outcome. One influential article stated that delayed intubation while waiting for hypercarbia would lead to “unnecessary traumatic emergency intubation and subsequent complications.” No study, to our knowledge, has specifically addressed this question in GBS. In this situation, there is also the potential for medicolegal implications. We reviewed our experience with patients who were resuscitated for acute respiratory failure.

Methods

A database of patients with GBS admitted to the intensive care units of the Mayo Medical Center, Rochester, Minn, between 1976 and 1996 has been collected, with details published elsewhere. We reviewed the medical records of these patients to determine which ones underwent emergency intubation and compared them with patients who were intubated electively. Emergency intubation was defined as the need for assisted ventilation in a patient with sudden unexpected dyspnea, hypoxemia, cyanosis, or respiratory arrest. Outcomes consisting of death, pulmonary complications including pneumonia, prolonged mechanical ventilation (>14 days), and prolonged weaning (>7 days) were compared between the 2 patient groups. Pneumonia was defined as pathogenic tracheal cultures in combination with an abnormal chest x-ray film. Vital capacity at admission to the intensive care unit and at nadir was compared in the 2 groups where available. Arterial blood...
Sixty patients with GBS were mechanically ventilated. In 17 patients the circumstances surrounding intubation were not precisely recorded in the medical record, although none experienced respiratory or cardiac arrest. These patients, many of whom were intubated before transfer to our institution, were excluded.

Six patients were intubated for agonal respiratory distress and 1 patient for respiratory arrest. These 7 patients were admitted before 1987. All patients had rapid clinical progression (bed-bound within days of onset of GBS), but emergency intubation had not been predicted. No differences in oropharyngeal weakness or facial palsy were noted between the groups. No difference in any of the outcome measures was found when these patients were compared with patients who were electively intubated. No statistical differences were found in mortality, pulmonary morbidity, or duration of ventilatory assistance. One patient with respiratory arrest, intubated emergently, experienced anoxic encephalopathy and remained stuporous for 3 weeks with a theta-delta pattern on the electroencephalogram. Marked cognitive impairment remained after 4 months of follow-up. The results are summarized in the Table.

**COMMENT**

Not enough information exists about the consequences of emergency intubation in patients with respiratory failure and rapidly worsening GBS. We did not find that sudden death from GBS occurred in any patient requiring emergency ventilation. However, 1 patient had an anoxic encephalopathy. A previous study suggested that when emergency intubation is performed at the time of profound hypercarbia, pulmonary morbidity increases, but we could not confirm this in our small sample. A possible explanation is that Newton-John looked at complications in the first week after intubation, whereas we examined the overall burden of respiratory morbidity.

Other studies in a general population in the intensive care unit have suggested the appearance of chest abnormalities and prolonged mechanical ventilation in patients who require urgent intubation or who have low vital capacity. Pneumonia, or any other infection associated with resuscitation, and prolonged ventilation or weaning were not significantly more common in patients requiring emergency intubations than in patients who were intubated electively. However, our data do emphasize increased pulmonary morbidity in patients who require mechanical ventilation for severe GBS. Clearly, early intubation and assisted ventilation are preferred in any patient with GBS who experiences respiratory failure. The consequences of respiratory arrest can be devastating. There is no reason to wait until arterial blood gas values change. However, if a patient rapidly worsens, leading to severe respiratory distress, our data suggest that pulmonary morbidity does not increase when urgent intubation is required.

This study with patients treated during 2 decades suggests a comparatively high incidence of emergency intubation in GBS. However, none of these emergency intubations occurred in the last 15 years of the study, suggesting better recognition of worsening neuromuscular respiratory failure or less hesitation to intubate when confronted with a patient rapidly worsening from GBS. It is also possible that the introduction of specific therapy has reduced the pace of worsening.

Accepted for publication November 22, 2002.

**Author contributions:** Study concept and design (Dr Wijdicks); acquisition of data (Drs Wijdicks and Henderson); analysis and interpretation of data (Drs Wijdicks, Henderson, and McClelland); drafting of the manuscript (Dr Wijdicks); critical revision of the manuscript for important intellectual content (Drs Wijdicks, Henderson, and McClelland); statistical expertise (Dr McClelland); study supervision (Drs Wijdicks and Henderson).

We thank Nicholas Lawn, FRACP, and Dade Fletcher, MD, for generating the database on patients with GBS admitted to the intensive care unit.

**Corresponding author:** Eelco F. M. Wijdicks, MD, Mayo Clinic, Neurology, WBB, 200 First St SW, Rochester, MN 55905 (e-mail: wijde@mayo.edu).

## REFERENCES