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Cost analysis of plasma exchange therapy for the treatment of Guillain-Barre syndrome

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Comments

Acute post-infective polyneuropathy or Guillain-Barre Syndrome remains one of the main reasons for acute neurological admission, and a significant proportion of these patients are admitted to the intensive care (ICU) environment, primarily because of ventilatory failure. The polyneuropathy is mainly motor, and paralysis is often progressive and ascending. Improvement in motor function can be a slow process, especially in the severe (mechanically ventilated) group. This has obvious implications on hospital resources at a time when it is becoming commonplace in several countries to justify medical interventions, not only in terms of clinical outcome, but also in terms of cost-effectiveness. The treatment of Guillain-Barre syndrome remains based on plasma exchange (PE) therapy and immunoglobulin administration, although supportive therapy, especially for respiratory muscle paralysis, is probably most important. The French Co-operative Group on Plasma Exchange in Guillain-Barre syndrome has been publishing its results since the mid-1980s, and a more recent study in 1997 (see *Additional information*) showed a definite improvement in outcome in terms of shorter hospital stay and better motor improvement at 1 year with PE, and indeed could recommend the number of PEs that were likely to be of use in mild, moderate and severe cases of the disease. The present paper comprehensively analyses the cost-effectiveness of the treatment schedule, and shows that least expensive strategies are either more or equally efficient as more expensive ones.

Introduction

The efficacy of PE therapy in Guillain-Barre syndrome has been demonstrated previously. A large ($n = 556$) randomised controlled multicentre study by the same group (see *Additional information*) defined the number of PEs needed in the management of the disease. In the 'Mild' (could walk but could not run) group, it was shown that two PEs lead to motor recovery in 4 days compared to 8 days in the 'no PE' group. In the 'Moderate' (could not stand unaided) group, the 4 PEs group walked earlier with assistance when compared with the 2 PEs group. In the 'Severe' (mechanically ventilated) group there was no difference in return to walking with assistance when 6 PEs were compared to 4 PEs.

Methods

- An economic study using data from 546 patients enrolled in the French Cooperative Group trial
- PE therapy began on the day of randomisation and was repeated every second day. Each session consisted of 1.5 plasma volumes. The replacement fluid consisted of equal amounts of gelatin and 4% albumin solutions
- Follow up was after 1 year. Time to walking with assistance was the endpoint
- The proportion of patients attaining full muscle strength of four limbs and cranial nerve function were also analysed
- Data on resource use consisted of length of hospital (ICU and otherwise) stay, number of PE sessions, days of rehabilitation, follow-up visits and tests and number of workdays lost
- Costs converted to Euros

Results

The unit cost of PE was 500 Euros. The unit cost of an ICU stay was 949 Euros; stay in neurology and rehabilitation wards cost 623 Euros and 375 Euros per unit, respectively. One year ambulatory costs varied from 720-6224 Euros according to patient. Healthcare data costs (initial admission, treatments, complications, 1 year follow-up) were also computed. Total costs for 2 PEs and 0 PE were 21353 Euros and 38753 Euros respectively for the mild group, for 4 PE and 2 PE were 59480 Euros and 80737 Euros respectively for the moderate group, for 4PE and 6 PE were 57621 Euros and 61056 Euros respectively for the severe group. Quicker time to recovery and shorter hospital stay with better outcomes at 1 year follow-up shows that treatment with PE therapy at the onset of all forms Guillain-Barre syndrome had excellent financial justification, and more importantly, positively correlated with the treatment strategy defined by the group.

Additional information

Appropriate number of plasma exchanges in Guillain-Barre syndrome. The French Cooperative Group on Plasma Exchange in Guillain-Barre Syndrome. *Ann Neurol* 1997, **41**:298-306.

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