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[Ann Neurol. 2009 Nov;66\(5\):597-603.](#)

Pharmacokinetics of intravenous immunoglobulin and outcome in Guillain-Barré syndrome.

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[Ann Neurol. 2009 Nov;66\(5\):569-70.](#)

OBJECTIVE: Intravenous immunoglobulin (IVIg) is the first choice treatment for Guillain-Barré syndrome (GBS). All patients initially receive the same arbitrary dose of 2g per kg body weight. Not all patients, however, show a good recovery after this standard dose. IVIg clearance may depend on disease severity and vary between individuals, implying that this dose is suboptimal for some patients. In this study, we determined whether the pharmacokinetics of IVIg is related to outcome in GBS. **METHODS:** We included 174 GBS patients who had previously participated in 2 randomized clinical trials. At entry, all patients were unable to walk unaided and received a standard dose of IVIg. Total IgG levels in serum samples obtained immediately before and 2 weeks after the start of IVIg administration were determined by turbidimetry and related to clinical outcome at 6 months. **RESULTS:** The increase in serum IgG (DeltaIgG) 2 weeks after IVIg treatment varied considerably between patients (mean, 7.8g/L; standard deviation, 5.6g/L). Patients with a low DeltaIgG recovered significantly more slowly, and fewer reached the ability to walk unaided at 6 months (log-rank $p < 0.001$). In multivariate analysis adjusted for other known prognostic factors, a low DeltaIgG was independently associated with poor outcome ($p = 0.022$). **INTERPRETATION:** After a standard dose of IVIg treatment, GBS patients show a large variation in pharmacokinetics, which is related to clinical outcome. This may indicate that patients with a small increase in serum IgG level may benefit from a higher dosage or second course of IVIg.

PMID: 19938102 [PubMed - indexed for MEDLINE]

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