

Case Report: Artesunate for Severe Acute *Plasmodium falciparum* Infection in a Patient with Myasthenia Gravis

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Abstract. We report a case of severe malaria in a patient with underlying myasthenia gravis who was successfully treated with artesunate. The outcome was favorable. Artesunate seems to be a good option for patients with underlying myasthenia gravis disease because they benefit from a better toxicity profile than quinine.

The treatment of severe malaria is difficult in patients with myasthenia. Antimalarial drugs such as chloroquine or mefloquine can precipitate severe manifestations of myasthenia.^{1,2} Quinine is contraindicated because it decreases the excitability of the motor end-plate region, thereby reducing responses to repetitive nerve stimulation by acetylcholine, and inducing muscle weakness that may lead to respiratory distress.^{3,4} Although parenteral artesunate is now considered as first-line treatment of severe malaria, we found no report about its tolerance and efficacy in patients with myasthenia.^{5,6} We describe a patient with underlying myasthenia gravis who rapidly recovered from severe malaria after treatment with intravenous artesunate and showed good tolerance.

A 35-year-old man from Senegal came back from a two-month trip to Senegal where he visited friends and relatives. On July 20, 2011, he had fever (39.5°C) lasting for four days and vomiting. He did not take antimalarial prophylaxis. Biological results showed no anemia (hemoglobin level = 15 g/dL), thrombocytopenia (58×10^9 cells/L), a high level of plasma lactate (2.5 mmol/L), and hyperbilirubinemia (44 micromol/L), and a thin blood smear showed *Plasmodium falciparum* (parasitemia = 1.7%). He was given a diagnosis of myasthenia gravis in 2007 on the basis of blepharoptosis and respiratory symptoms, associated with a high level of antibodies against acetylcholine receptor (> 100 nmol/L).⁷ He was efficiently treated for myasthenia gravis with azathioprin and pyridostigmin for four years.

Because of his medical history of myasthenia gravis, quinine contraindication, and high plasma lactate level, he was given intravenous artesunate, 2.4 mg/kg, 3 times a day (0, 12, and 24 hours) for 1 day, then once a day for 3 days, followed by artemether-lumefantrine, 4 pills twice a day for 3 days. Fever disappeared within 24 hours. Parasitemia became negative in less than 72 hours. Myasthenia gravis symptoms were monitored twice a day by using the myasthenia gravis score.⁷ No myasthenia symptoms were observed during hospitalization, and blood smears remained negative on days 3, 7, and 28. No side effects (specifically, no anemia) were observed during the follow-up period.

Quinine is known to trigger symptoms of myasthenia.^{3,4} In a comparative study of 102 patients treated for severe *P.*

falciparum malaria with either intramuscular artemether or intravenous quinine, one patient treated with quinine (and no patients treated with artemether) had an attack of myasthenia gravis.⁸ In the two most important studies evaluating intravenous artesunate versus quinine in severe malaria, patients with myasthenia were not enrolled.^{5–9}

We used artesunate to treat a patient with severe malaria and underlying myasthenia gravis disease. We did not observe any neurologic symptoms during or after treatment. In addition to its greater efficacy and reduced toxicity, artesunate appears to be safe in the management of malaria in those with myasthenia gravis for whom quinine and related compounds should be avoided. Further studies confirming artesunate safety in those with myasthenia would be helpful.

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