





## Images in Rheumatology

# Skeletal and Cardiac Muscle Hydroxychloroquine Toxicity

Maude Bouchard Marmen , MD, Service de Rhumatologie, CHU de Québec – Université Laval, Québec City, Québec, Canada; Mickael Ohana , MD, PhD, Département de Radiologie, Hôpitaux Universitaires de Strasbourg, Strasbourg, France; Jean-Jacques Von Hunolstein , MD, Division de Médecine Cardiovasculaire, Hôpitaux Universitaires de Strasbourg; Béatrice Lannes , MD, PhD, Département de Pathologie, Hôpitaux Universitaires de Strasbourg, Strasbourg, France; Alain Meyer, MD, PhD, Service de Physiologie et d'Explorations Fonctionnelles, Hôpitaux Universitaires de Strasbourg, Strasbourg, France. Address correspondence to Dr. M. Bouchard Marmen, Service de Rhumatologie, CHU de Québec – Université Laval, 2705 Bd Laurier, Québec City, QC G1V 4G2, Canada. Email: maude.bouchard-marmen.1@ulaval.ca. The authors declare no conflicts of interest relevant to this article. The authors received ethics approval (Comité consultatif sur le traitement de l'information en matière de recherche dans le domaine de la santé, n° 09.002) and the patient's written informed consent for publication.

The prevalence of long-term antimalarial muscle and cardiac toxicity has been estimated at 6.5%.<sup>1</sup> Antimalarial-induced cardiomyopathy is reversible in 45% of cases after treatment discontinuation and is associated with a 20% mortality rate.<sup>2</sup>

A 63-year-old woman consulted for progressive muscle weakness over 10 years and elevated creatine kinase (CK) level (830 U/L). She was treated with hydroxychloroquine (HCQ) 400 mg/day (cumulative dose of 4526 g) for Sjögren syndrome. Examination demonstrated camptocormia and limb girdle weakness (4/5 Medical Research Council scale). Serum troponin I and N-terminal pro-brain natriuretic peptide (NT-proBNP) were chronically elevated at 1800 ng/L to 3500 ng/L (normal < 54 ng/L) and 145 ng/L to 330 ng/L (normal < 100 ng/L), respectively. Myositis autoantibodies were negative. Echocardiography showed left ventricular remodeling with preserved ejection fraction, bright myocardium, and diastolic dysfunction. Cardiac magnetic resonance (Figure 1A) revealed multiple foci of subepicardial late gadolinium enhancement in the inferoseptal, inferolateral, and apical regions. Coronary angiography was normal. Free light chains, serology tests (hepatitis C virus, HIV, Lyme disease, *Trypanosoma cruzi*,

vitamin B1, thyroid stimulating hormone, acid maltase, and *TTR* gene analysis were negative or normal. Deltoid muscle biopsy (Figure 1B) showed vacuoles and basophilic granular material, positive for acid phosphatase, within muscle fibers. Neither inflammatory infiltrates nor sarcolemmal expression of major histocompatibility complex class I was noted. HCQ cardiomyotoxicity was diagnosed. Four months after stopping HCQ, CK normalized. Troponin I and NT-proBNP remained elevated, and she died suddenly 5 months after treatment discontinuation. Muscle biopsy and CK monitoring after antimalarial discontinuation are simple diagnostic tests.

## REFERENCES

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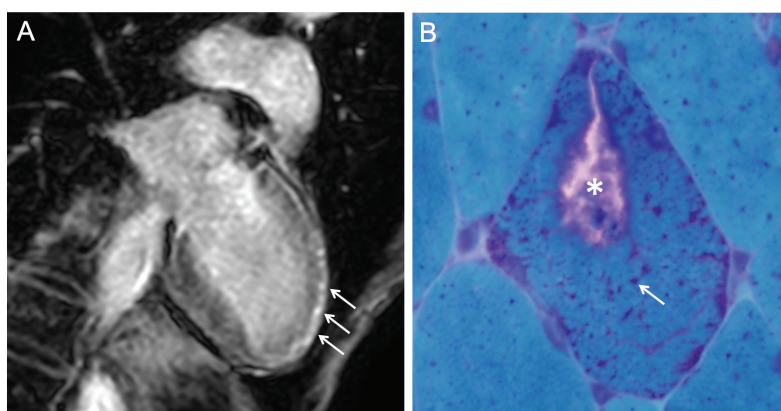


Figure 1. Cardiac and histological muscle findings. (A) Cardiac magnetic resonance showing foci of subepicardial late gadolinium enhancement in the inferoseptal, inferolateral, and apical regions (arrows). (B) Deltoid muscle biopsy showing vacuoles (asterisk) and basophilic granular material (arrow), positive for acid phosphatase (not shown), within muscle fibers.