

U.S. Marines in the 26th Marine Expeditionary Unit returning from Liberia.

Methods: Thirty-two Marines were medically evacuated from Liberia to the National Naval Medical Center in Bethesda, Maryland. The Marines had contracted an undifferentiated febrile illness, and some required mechanical ventilation and intensive care. Symptoms varied and included headache, myalgias, shortness of breath, diarrhea, and abdominal pain. The differential diagnosis included *P. falciparum* malaria, Lassa fever, leptospirosis, and rickettsial infections. All patients had received presumptive treatment for malaria before being evacuated. On arrival at the naval center, while bacterial and viral serologic assays were being completed, blood was immediately tested by using the 10-minute NOW ICT test, according to the manufacturer's instructions. Simultaneously, both thick- and thin-smear microscopy were performed. The NOW ICT test was then compared with the gold standard thick-smear test. Laboratory technicians and infectious disease physicians who interpreted the blood smears did not know the results of the NOW ICT test. The NOW ICT test was not used to make decisions about individual patients.

Results: Ten of 32 patients had positive results on the NOW ICT test, and 10 of 32 had positive thick-smear results. The results of the rapid diagnostic tests were reported faster than smear results: approximately 10 minutes compared with an average of 1 hour. Twenty-two patients had negative results on both the NOW ICT test and the thick-smear test. In addition, the results of 1 patient's thin-smear test were originally reported as negative although the results of the NOW ICT test were positive. After further review of the thin smear, *P. falciparum* was found. Test results are shown in the accompanying Table.

In our sample, the NOW ICT test had a sensitivity and specificity of 1.00, with 95% CIs of 0.63 to 1 and 0.85 to 1.00, respectively. The patients with positive results on NOW ICT tests remained hospitalized longer; all 3 patients admitted to intensive care had positive results on NOW ICT tests.

Discussion: The NOW ICT test for histidine-rich protein II antigenemia showed remarkable accuracy in predicting *P. falciparum* infection and did so more expeditiously than microscopy. This easy-to-use diagnostic test appears to provide the speed and accuracy needed for rapid diagnosis of malaria in endemic countries, for military use, and for work-up of febrile illness outbreaks in travelers returning from the tropics. The small number of patients studied limits our data, and caution must be applied in interpreting negative results. Studies to investigate the usefulness of the NOW ICT test for the detection of *P. falciparum* are under way. Our experience adds to the growing literature supporting the use of rapid diagnostic tests for the detection of *P. falciparum* in certain circumstances. In addition, it demonstrates the usefulness of these tests in an outbreak of febrile illnesses where malaria is a possible diagnosis.

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Two Patients with Acute Liver Injury Associated with Use of the Herbal Weight-Loss Supplement Hydroxycut

TO THE EDITOR: *Background:* Many herbal supplements contain compounds that are potentially hepatotoxic (1). Newly formulated Hydroxycut (MuscleTech, Mississauga, Ontario, Canada) is a concoction of plant extracts designed to speed weight loss by increasing metabolism and curbing appetite (2).

Objective: To report 2 cases of severe hepatotoxicity associated with use of the weight-loss aid Hydroxycut.

Case Reports: Two men presented to our emergency department within a 2-month period and were admitted to the hospital. They were previously healthy and reported no recent foreign travel; sick contacts; or risk factors for viral, alcoholic, autoimmune, or hereditary liver disease. Except for Hydroxycut, they reported no recent use of herbal or prescription medications. Both underwent a similar serologic work-up, including viral studies (hepatitis A, B, and C viruses; Epstein-Barr virus; cytomegalovirus), antinuclear and anti-smooth-muscle antibody levels, acetaminophen level, and toxicology screening, which was unremarkable.

Patient 1, a 27-year-old man, presented with 8 days of fatigue and jaundice. He had been taking Hydroxycut for 5 weeks, 3 tablets 3 times per day. Laboratory analysis revealed a serum aspartate aminotransferase level of 1808 U/L (normal range, 5 to 50 U/L), a serum alanine aminotransferase level of 3131 U/L (normal range, 7 to 40 U/L), a bilirubin level of 133 $\mu\text{mol/L}$ (7.8 mg/dL) (normal range, 0 to 26 $\mu\text{mol/L}$ [0.0 to 1.5 mg/dL]), an alkaline phosphatase level of 171 U/L (normal, 40 to 150 U/L), an albumin level of 39 g/L (normal range, 35 to 50 g/L), a prothrombin time of 16 seconds (normal range, 9 to 13 seconds), and a platelet count of 208×10^9 cells/L (normal range, 150 to 400×10^9 cells/L). The aminotransferase levels peaked on hospital day 2 (aspartate aminotransferase level, 1969 U/L; serum alanine aminotransferase level, 3962 U/L). Four weeks later, results of the liver function tests had improved substantially (serum aspartate aminotransferase level, 114 U/L; serum alanine aminotransferase level, 304 U/L; bilirubin level, 22 $\mu\text{mol/L}$ [1.3 mg/dL]).

Patient 2, a 30-year-old man, presented with 10 days of jaundice, fever, vomiting, and fatigue. For 5 days, between the 16th and 11th days before presentation, he had been taking 9 tablets of Hydroxycut per day. Except for jaundice and minimal abdominal tenderness, results of physical examination were normal. Laboratory analysis revealed a serum bilirubin level of 133 $\mu\text{mol/L}$ (7.8 mg/dL), an alkaline phosphatase level of 530 U/L, an aspartate aminotransferase level of 59 U/L, a serum alanine aminotransferase level of 45

Table. Listed Ingredients in Newly Formulated Hydroxycut*

Calcium
Chromium
Potassium
<i>Garcinia cambogia</i>
<i>Gymnema sylvestre</i> leaf extract
Glucomannan
α -Lipoic acid
Willow bark extract
L-Carnitine
Green tea leaf extract
Caffeine
Guarana extract
Others (gelatin, silica, cellulose)

* Reference 2. Hydroxycut is manufactured by MuscleTech (Mississauga, Ontario, Canada).

U/L, an albumin level of 28 g/L, a prothrombin time of 15 seconds, and a platelet count of 217×10^9 cells/L. An abdominal computed tomography scan and endoscopic retrograde cholangiogram were negative. On hospital day 4, liver biopsy revealed cholestasis and portal inflammation. The laboratory abnormalities improved, and the patient was discharged on hospital day 9. Two months later, results of liver tests were normal.

Discussion: To our knowledge, these are the first reported cases of hepatotoxicity associated with the use of Hydroxycut. Although the evidence reported here is not definitive, the lack of evidence for other causes and the temporal relationship of Hydroxycut ingestion to liver injury suggest a causative relationship. It is not clear which of the ingredients in Hydroxycut may have been responsible for hepatotoxicity (Table). A MEDLINE search did not reveal previous cases of hepatotoxicity resulting from *Garcinia cambogia*, *Gymnema sylvestre*, willow bark, glucomannan, green tea, or guarana extract.

Patient 2 presented with a cholestatic liver injury pattern, and histologic examination confirmed portal inflammation and cholestasis. Several herbs have been reported to produce cholestatic hepatitis including chaparral, kava, and Jin Bu Huan (3). Patient 1 presented with markedly elevated aminotransferase levels; although a biopsy was not obtained, hepatocyte necrosis was the likely pattern of injury. It is not unusual for a single herbal preparation to produce more than 1 type of clinicopathologic liver injury (4).

Conclusion: Evidence for the efficacy of *Garcinia cambogia* in promoting weight loss is not compelling (5). We therefore urge caution in the use of this supplement. Of broader concern are the widespread use of herbal preparations and lack of adequate monitoring of adverse outcomes.

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Editor's Note: The lead author of the following Clinical Observation was one of a dozen Associates of the American College of Physicians selected to present a clinical vignette at the 2004 Annual Session in New Orleans. We are proud to present this case report through a special arrangement with the Council of Associates of the College.

Choreoathetosis with Dopamine

TO THE EDITOR: **Background:** Choreoathetosis is an involuntary, short-lasting, continuous, slow, writhing movement of the limbs, trunk, head, face, or tongue. The word derives from the Greek roots *chorea*, meaning "to dance," and *athetosis*, meaning "unfixed." The differential diagnosis of acute choreoathetosis in adults includes encephalitis, hepatic encephalopathy, and adverse effects of medications.

Objective: To describe a previously unreported cause of choreoathetosis.

Case Report: An 84-year-old woman presented to the emergency department with syncope. She was in a junctional rhythm with a heart rate of 49 beats/min and a blood pressure of 72/28 mm Hg. These findings were attributed to a recent increase in her diltiazem dose. Dopamine infusion at a rate of 10 μ g/h was started to correct the hypotension. After the initiation of this therapy, the patient developed choreoathetoid movements and confusion. She was subsequently given atropine, 1 mg, for bradycardia. Her blood pressure stabilized 2 hours later, and the dopamine was stopped. However, the abnormal movements continued.

Dopamine and atropine were the patient's only new medications. Her other medications were diltiazem, aspirin, atenolol, fentanyl, ferrous sulfate, alendronate, L-thyroxine, lisinopril, conjugated estrogen, pantoprazole, and mirtazapine.

On arrival to the medical floor, the patient's blood pressure was 130/82 mm Hg, her pulse rate was 83 beats/min, her respiratory rate was 14 breaths/min, and her oxygen saturation was 92% on 2 L of oxygen delivered by nasal cannula. She was oriented to person only and had choreoathetoid movements of the mouth and tongue. The remainder of the physical examination was unremarkable. Noncontrast computed tomography of the head showed only chronic small-vessel disease.

The patient's arrhythmia did not return, her blood pressure remained stable, and at a repeated examination done 8 hours after admission, the choreoathetoid movements had resolved and her mentation had returned to baseline.

Discussion: To our knowledge, choreoathetoid side effects of dopamine have not been reported in the literature. Neurologic effects of the neurotransmitter dopamine are well documented from experience with L-dopa. That drug is a precursor of dopamine with a carboxyl group added; as a result it is lipid soluble and can cross the blood-brain barrier. Dopamine, however, is not lipid soluble. Once in the brain, L-dopa is decarboxylated to become dopamine. The neurotransmitter acts by stimulating the striatum (a nucleus of the