

Abstracts of current literature on epidemiology, diagnosis, and treatment

Series Editor: Jihad Slim, MD

## MITOCHONDRIAL DNA LEVEL AS A MARKER OF NUCLEOSIDE TOXICITY

A novel polymerase chain reaction assay for mitochondrial DNA (mtDNA) was performed to study the changes in mtDNA relative to nuclear DNA (nDNA) in the peripheral blood cells of HIV-infected patients with symptomatic, nucleoside-induced hyperlactatemia. Total DNA was extracted from cells of venous blood from subjects in 3 different groups: 24 controls not infected with HIV, 47 HIV-infected asymptomatic patients never treated with antiretroviral drugs, and 8 HIV-infected patients with symptomatic hyperlactatemia who had received antiretroviral therapy. The patients in the latter group were studied longitudinally before, during, and after antiretroviral therapy. The mean mtDNA/nDNA ratio among the non-HIV-infected patients was significantly higher than that among the HIV-infected asymptomatic patients never treated with antiretroviral drugs. Symptomatic hyperlactatemia was associated with marked reductions in mtDNA/nDNA ratios, which, during antiretroviral therapy, averaged 68% lower than those of non-HIV-infected controls and 43% lower than those of HIV-infected asymptomatic patients never treated with antiretroviral drugs. After discontinuation of antiretroviral therapy, the mtDNA/nDNA ratio significantly increased. According to the longitudinal study, a decline in mtDNA preceded an increase in venous lactate levels. Researchers concluded that mtDNA levels are significantly decreased in HIV-infected patients with symptomatic hyperlactatemia but that this effect resolves on discontinuation of antiretroviral therapy.

Cote HC, Brumme ZL, Craib KJ, et al. Changes in mitochondrial DNA as a marker of nucleoside toxicity in HIV-infected patients. *N Engl J Med* 2002;346:811-20.

## ERYTHEMA MIGRANS AND EARLY LYME DISEASE

An observational cohort study was performed at 31 university-based or clinician practice sites in 10 Lyme disease-endemic states to examine the clinical presentation and treatment outcome of early Lyme disease in patients with microbiologically confirmed erythema migrans. From a total of 10,936 participants age 15 to 70 years enrolled in a phase III trial of a Lyme disease vaccine, 118 met study criteria for early Lyme disease with erythema migrans in which *Borrelia burgdorferi* was detected by culture or polymerase chain reaction assay of skin biopsy specimens. Rashes in these patients were evaluated a median of 3 days after onset. On the basis of clinical photographs, 59% of the rashes consisted of homogeneous erythema, and 32% had more intense central erythema surrounded by a paler peripheral ring. The most common signs and symptoms associated

with erythema migrans included low-grade fever, headache, neck stiffness, myalgia, arthralgias, and fatigue. By convalescence, 65% of patients had positive IgM or IgG antibody responses to *B. burgdorferi* on Western blot serologic testing. Most patients responded promptly to standard 14- to 30-day courses of antibiotic treatment. Researchers concluded that patients with early Lyme disease commonly have homogeneous or dense central erythematous lesions, rather than classic erythema migrans. Clinical outcome is excellent with administration of antibiotic therapy soon after symptom onset.

Smith RP, Schoen RT, Rahn DW, et al. Clinical characteristics and treatment outcome of early Lyme disease in patients with microbiologically confirmed erythema migrans. *Ann Intern Med* 2002;136:421-8.

## AGE AT ACQUISITION OF HELICOBACTER PYLORI INFECTION

A sample of a longitudinal cohort of children was monitored from infancy (in 1975-1976) through young adulthood (in 1995-1996) to study the age at which *Helicobacter pylori* infection is acquired and the effects of race and sex on the acquisition of infection. Subjects (n = 224) were monitored with repeated blood samples; information on potential *H. pylori* risk factors (eg, age, race, sex) was obtained for each child. *H. pylori* infection status was assessed by the presence of serum IgG antibodies. The cohort consisted of 99 black and 125 white children; 110 were male and 114 were female. The frequency of *H. pylori* seropositivity increased from 8.0% (age 1-3 years) to 24.5% (age 18-23 years) and differed significantly between black and white children. No significant difference was observed between male and female participants during childhood or early adulthood. Of the 206 children who were seronegative for *H. pylori* at the beginning of the study, 40 seroconverted during follow-up. The relative risk of *H. pylori* seroconversion was 3 times higher in black than in white children. The yearly rate of seroconversion was 1.1%; it was highest among children at age 4 to 5 years (2.2% vs 0.2% at age 18-19 years). Researchers concluded that most *H. pylori* infections were acquired before age 10 years and that treatment and preventive strategies should be aimed at children in this age group.

Malaty HM, El-Kasabany A, Graham DY, et al. Age at acquisition of *Helicobacter pylori* infection: a follow-up study from infancy to adulthood. *Lancet* 2002;359:931-5.

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