



From the Desk of Dr. Stephen Sinatra

Coenzyme Q₁₀ and Congestive Heart Failure

Stephen T. Sinatra, M.D., F.A.C.C., F.A.C.N., C.N.S., C.B.T

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TO THE EDITOR: Khatta and colleagues' study (1) was too short in duration and the dosage of coenzyme Q₁₀ too low for patients with class III and class IV congestive heart failure. Earlier research indicated that therapeutic blood levels of coenzyme Q₁₀ should be at least 2.5 $\mu\text{g}/\text{mL}$ to elicit a biosensitive result (2). In Khatta and colleagues' study, 19 of 22 patients had blood levels lower than this minimal amount. In another investigation, optimum improvement in myocardial function occurred with an average blood level of 2.9 $\mu\text{g}/\text{mL}$ (3). When higher blood levels are obtained ($>3.5 \mu\text{g}/\text{mL}$), subjective or objective results are further realized in these patients. No patients in Khatta and colleagues' study had a blood level greater than 3.5 $\mu\text{g}/\text{mL}$. We must also keep in mind that the "response window" at which patients will best appreciate benefits from coenzyme Q₁₀ treatment varies widely. Often, the sickest patients are so depleted of coenzyme Q₁₀ that they require the highest doses of the compound. Case studies have demonstrated that typical doses ($<300 \text{ mg}$ of standard coenzyme Q₁₀) are often insufficient to have any significant impact in patients with severely compromised left ventricular function. Just as cardiologists recommend lower doses of angiotensin-converting enzyme inhibitors and keep doubling the dose until a therapeutic response is achieved, similar reasoning should be used with coenzyme Q₁₀.

Because endocardial biopsy samples taken from patients with chronic congestive heart failure have shown a decrease in adenosine triphosphate concentration and impaired myocardial contraction, it is now believed that serious defects in metabolism of myocytes are present in congestive heart failure (4). The 6-month time frame used by Khatta and colleagues to study patients may be insufficient to elicit a beneficial response. In addition, β -blocker therapy was administered to 18 of 22 patients in each group. Because β -blockers may interfere with coenzyme Q₁₀-dependent enzymes, they may compromise the efficacy of coenzyme Q₁₀ (5).

In summary, Khatta and colleagues' study, although well designed for subjective and objective criteria, was tainted by concomitant β -blockade and a too-short duration, and the blood levels were inadequate to really make a difference.

Stephen T. Sinatra, MD
New England Heart Center
Manchester, CT 06040

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