

The place of CoQ10 in prevention



DR MICHAEL TAM

BSC(MED), MBBS, MMH(GP), FRACGP
Staff specialist, GP Unit, SWSLHD &
Ingham Inst; Conjoint Sen Lecturer, UNSW

Is routine supplementation warranted in patients who are prescribed statin therapy?

CLINICAL SCENARIO

Recently, a member of the GPs Down Under online discussion group described a situation where their patient, who had been

prescribed a statin, was recommended by a pharmacist to also take co-enzyme Q10 (CoQ10) to prevent side-effects. Does the evidence base support this practice?

CLINICAL QUESTION

What is the effect of CoQ10 on the prevalence of side-effects, in people prescribed statin therapy?

THE RESEARCH EVIDENCE

STEP 1: The Cochrane Library
The Cochrane Library does not have a systematic review on this question.

STEP 2: TripDatabase
I conducted a search using the TripDatabase PICO search tool (Participant: “statin”, Intervention: “co-enzyme Q10”, Comparator: blank, Outcomes: “side-effects”).

The results made it clear that the majority of the research looked at statin-induced myopathy.

Accepting this as the outcome of

interest, the first result from the TripDatabase search was a meta-analysis of randomised trials by Banach and colleagues, published in the journal, Mayo Clinic Proceedings in 2015.¹ Let’s look at this study in more detail.

CRITICAL APPRAISAL

I will use the systematic reviews critical appraisal sheet from the Centre for Evidence Based Medicine.²

WHAT PICO QUESTION DOES THE SYSTEMATIC REVIEW ASK?

In adults receiving statin therapy (Participants); what is the effect of CoQ10 supplementation (Intervention); compared with placebo (Comparator); on statin-induced myalgia (as measured by “muscle pain” and/or serum creatine kinase) (Outcome).

IS IT CLEARLY STATED?

Yes. The question is clearly and explicitly given.

IS IT UNLIKELY THAT IMPORTANT STUDIES WERE MISSED?



Probably, yes. The authors searched multiple electronic databases, but their search strategy was not clearly described.

WERE THE CRITERIA USED TO SELECT ARTICLES FOR INCLUSION APPROPRIATE?

Yes. The authors included only randomised trials that compared CoQ10 with placebo and were designed to assess its impact on myopathy (p. 25)¹.

WERE THE INCLUDED STUDIES SUFFICIENTLY VALID FOR THE QUESTION ASKED?

Unclear. The authors formally assessed the risk of bias of the included studies using Jadad scales² – five of six included studies had a Jadad score of 3, which is on the threshold of “low/high” quality.

All included studies had a small number of participants (all but one with 50 or fewer), and were of short duration (three months or less).

WERE THE RESULTS SIMILAR BETWEEN STUDIES?

No. There was large heterogeneity between

the studies on the effect of CoQ10 on muscle pain ($I^2 = 89\%$, $p < 0.001$).

THE RESULTS

Focussing on muscle pain, the effect of CoQ10 supplementation compared to placebo in participants on statin therapy was:

- No statistically significant result. The confidence interval of the effect size was very wide, with large heterogeneity, $SMD = -0.53$ (95% CI, -1.33 to 0.28; $p = 0.20$).

DISCUSSION AND CONCLUSION

The reviewed study demonstrated that there were only a handful of randomised trials of unclear quality on this topic. The results from these studies were inconsistent.

The authors in the meta-analysis provided the above pooled result in their analyses, but it may not be valid to do so when the results are so heterogeneous (see StatFacts box on I^2 statistic interpretation).

The statistic, $I^2 = 89\%$ can be considered to be an indication of the percentage of

the variation (that is, almost all of it) in the muscle pain results observed between the individual studies that is not explained by natural random chance.

This should make us wonder what the actual reasons for the observed effect sizes are – perhaps differences in study design (e.g. different populations) or bias.

SO, HOW DO WE INTERPRET THE EVIDENCE?

There is inconsistent and possibly incompatible research evidence of the effect of CoQ10 on muscle pain in people on statin therapy. Much of this evidence is of limited quality. There is the possibility of publication bias (figure 6¹). The actual effect that CoQ10 has on muscle pain is uncertain, but the range of best estimates at present includes no effect.

As such, CoQ10 cannot be recommended, especially as a matter of routine supplementation, to prevent muscle pain in people taking statins.

References at medobs.com.au ■



Stat Facts

I^2 STATISTIC INTERPRETATION

This statistic is a measure of the statistical inconsistency, or heterogeneity, of the individual studies in a meta-analysis. As a rough guide⁴: 0-40% (might not be important), 30-60% (moderate heterogeneity), 50-90% (substantial heterogeneity), 75-100% (considerable heterogeneity).