Review: β-blockers increase fatigue and sexual dysfunction but not depression after myocardial infarction

We disagree with Dr. Swann that a nocebo effect and a variation in event rates in the studies invalidate the results of our study (1). First, we disagree that a prominent apparent nocebo effect biases toward underdetection of side effects in placebo-controlled trials. The nocebo phenomenon refers to symptoms, physiologic changes, or both that follow administration of a placebo that the patients believe to be an active drug (2). Since patients enrolled in placebo-controlled trials are unaware of the medication they receive, the nocebo effect should be equally exerted in both treatment groups. In fact, the nocebo effect furnishes a justification for including placebos in clinical trials because it permits a more accurate appraisal of the side effect profile of the active medication. Without such a placebo comparison, the active medication may be associated with side effects that are the nonspecific consequences of taking any medication (2). Second, we disagree that the variation of event rates observed in the trials may invalidate our results. Since the assessment of side effects is applied equally in both the β-blocker and the placebo groups, the estimate of risks of β-blockers should not be affected.

The main intent of our study was to provide estimates of risks for side effects that are commonly believed to be substantially related to β-blocker therapy, such as depression, fatigue, and sexual dysfunction. Contrary to conventional beliefs, β-blockers are not associated with substantial risks for these side effects.

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References

1. **Review: β-blockers increase fatigue and sexual dysfunction but not depression after myocardial infarction** [**Abstract**]. **ACP J Club.** 2003 Jan-Feb;138:4. Abstract of: Ko DT, Hebert PR, Coffey CS, et al. β-blocker therapy and symptoms of depression, fatigue, and sexual dysfunction. JAMA. 2002;288: 351-7.
2. **Barsky AJ, Saintfort R, Rogers MP, Borus JF.** Nonspecific medication side effects and the nocebo phenomenon. JAMA. 2002;287:622-7.

In response:

My commentary on the interesting and useful review by Ko and colleagues raised questions about the interpretation of the data. Contrary to their letter, it did not state that their conclusions were invalid (in fact it supported some of them). Their arguments in response to the commentary, however, do not effectively address the concerns raised. Their discussion of the nocebo effect ultimately supports the point of my commentary, stating that "since patients enrolled in placebo-controlled trials are unaware of the medication they received, nocebo effects should be equally exerted in both treatment groups." But it can be difficult to distinguish a nocebo or a placebo effect from a true pharmacologic effect; the physiologic mechanisms can even be the same (1). This holds for both positive and negative expectations (2, 3). Patients enrolled in randomized clinical trials read a detailed informed consent document that describes the potential side effects of the active drug. Side effects of placebo are well-documented to resemble those of active drugs (2, 4). Placebo and nocebo effects are therefore not limited to "nonspecific" drug effects. That does not negate the importance or utility of placebo-controlled trials, but underscores the fact that nocebo effects may reduce the apparent difference in the rate of side effects in persons randomized to placebo compared with those randomized to the active drug, a general point that must be kept in mind when interpreting placebo-controlled trials (4).

These considerations would tend to bias results conservatively, so the fact that in some instances a difference emerged despite them is cause to believe that a true drug effect exists, although its extent is hard to gauge. The point remains that the rates of the same side effects varied by as much as 60-fold across trials and were correlated between placebo and active drug with an *r* that was generally close to unity, yet the difference between corresponding placebo and active drug side effect rates was generally only a few percent at most. Interpretation of the evidence is therefore compromised by the robust correlation between side effect rates for placebo and active drug (nocebo effect) and by the wide variation in rates across studies, which dwarfed the differences within studies and suggests that the studies were so heterogeneous (whether in design, patient population, drugs used, or some combination) that their interpretability as an aggregate may be problematic.

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References

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