POEMs

Patient-Oriented Evidence That Matters

Eating Eggs Is Not Associated with Cardiovascular Disease

Clinical Question

Is the consumption of eggs associated with an increased risk of cardiovascular disease?

Bottom Line

Egg consumption is not associated with the occurrence of cardiovascular events over an average of 12 years. A meta-analysis found that eating more than one egg per day, on average, was associated with a decreased likelihood of coronary artery disease (approximately 11%). This decrease may be due to a healthy user bias; that is, eating eggs may be associated with healthy habits. (Level of Evidence = 2b)

Synopsis

The authors searched five databases, including the Cochrane Library, and identified 23 observational studies of almost 1.4 million patients with an average follow-up of 12.3 years. One author selected the studies and two investigators independently abstracted the data. The studies' quality, evaluated by two investigators, was moderate to high for observational studies. There was no association between egg consumption and an increased risk of cardiovascular disease events, but there was a high degree of heterogeneity among the studies. Compared with eating no eggs or one egg per day on average, eating more than one egg per day on average was associated with a significantly decreased risk of coronary disease (hazard ratio = 0.89; 95% CI, 0.86 to 0.93) without evidence of heterogeneity, but there was no effect on the risk of stroke (moderate heterogeneity).

Study design: Meta-analysis (other)

Funding source: Self-funded or unfunded

Setting: Various (meta-analysis)

Reference: *Krittanawong C, Narasimhan B, Wang Z, et al. Association between egg consumption and risk of cardiovascular outcomes: a systematic review and meta-analysis.* Am J Med. *2021;134(1):76-83.e2.*

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Lipid Lowering Is Beneficial for Secondary Prevention but Not Primary Prevention in Patients 75 Years and Older

Clinical Question

Does lipid lowering reduce major vascular events in patients 75 years and older?

Bottom Line

This meta-analysis inappropriately conflates studies of primary and secondary prevention, and the authors argue that their data support the use of lipid-lowering drugs in older adults. That may be true for secondary prevention, but it is clearly not proven for primary prevention. The STAREE trial is currently recruiting 18,000 older adults and randomizing them to receive atorvastatin (Lipitor), 40 mg, or placebo, and it will hopefully provide greater clarity about the use of lipids for primary prevention (results expected in 2023). (Level of Evidence = 1a–)

Synopsis

Previous studies have found attenuation of the benefit of statins in older patients, especially in those older than 75 years. This meta-analysis included 24 of 28 studies from an individual patient data meta-analysis of statin trials (excluding four studies that were limited to patients with heart failure or who were on dialysis), as well as a newly published statin trial, two ezetimibe (Zetia) trials, and two proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitor trials. The authors treat the individual patient data

meta-analysis as a single large study: it provided 11,108 of the 21,492 patients 75 years and older in this meta-analysis. The other studies ranged in size from 642 to 3,411 patients. It is important to note that many of the studies in the individual patient data meta-analysis and four of the five other studies were of secondary prevention rather than primary prevention. For the statin trials, the relative risk of major vascular events (i.e., cardiovascular death, myocardial infarction, acute coronary syndrome, coronary revascularization, or stroke) was 0.82 (95% CI, 0.73 to 0.91). For the four nonstatin trials, the relative risk was 0.67, but with a broader confidence interval (95% CI, 0.47 to 0.95). The authors then provided a combined estimate for statin and nonstatin trials, mixing primary and secondary prevention. For primary prevention using statins there was no significant reduction in major vascular events, with 2.6% per year in the statin group and 2.7% in the control group. There was no difference in all-cause mortality for primary or secondary prevention studies of statins or nonstatins (relative risk = 0.97; 95% CI, 0.82 to 1.15).

Study design: Systematic review

Funding source: Unknown/not stated

Setting: Outpatient (any)

Reference: *Gencer B, Marston NA, Im K, et al. Efficacy and safety of lowering LDL cholesterol in older patients: a systematic review and meta-analysis of randomised controlled trials.* Lancet. *2020; 396(10263):1637-1643.*

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Exercise Is the Only Intervention to Provide Long-Term Improvement in Patients with Chronic Low Back Pain

Clinical Question

What interventions are effective in managing patients with chronic low back pain?

Bottom Line

The interventions that are better than control in achieving at least a 30% reduction in pain are exercise, oral nonsteroidal anti-inflammatory drugs (NSAIDs), duloxetine (Cymbalta), and opioids, but discontinuations of the latter two treatments were common. Lower-quality data suggest that manipulation and topical capsaicin are also effective. It is possible the authors' inclusion criteria missed important studies. (Level of Evidence = 1a–)

Synopsis

The authors performed 15 individual systematic reviews focusing on individual interventions for managing patients with chronic (at least three months' duration) low back pain. They searched the Medline, EMBASE, and Cochrane databases, as well as clinical trials registries to identify randomized trials. Two authors independently evaluated potential studies for inclusion and risk of bias. They included 63 trials with more than 16,000 participants. Several interventions resulted in no search results because they lacked a responder analysis: acetaminophen, cannabinoids, muscle relaxants, and antidepressants other than duloxetine. The quality of the included studies was mixed. The authors reported meaningful reductions in pain (at least a 30% reduction) as the primary outcome for the included studies. They included 18 studies of exercise, most commonly guided by a physiotherapist. After pooling, they estimated that 50% of exercising patients and 35% of control patients achieved meaningful pain relief (number needed to treat [NNT] = 7; 95% CI, 6 to 10). They reported that a significant proportion of patients who were randomized to receive an exercise intervention had sustained relief even after the intervention was completed (NNT = 6; 95% CI, 5 to 9). In four trials, oral NSAIDs were more effective than control (NNT = 6; 95% CI, 5 to 8) while patients were taking them. Four trials of duloxetine also found it to be more effective than control (NNT = 10; 95% CI, 7 to 18), but discontinuation of treatment due to adverse effects was more common with duloxetine (number needed to harm [NNH] = 11). Spinal manipulation (five trials; low-quality evidence) was more effective than control in achieving pain relief (57% vs. 39%; NNT = 6; 95% CI, 4 to 10). Three trials (overall lower quality) evaluated topical capsaicin for three weeks. It was effective (NNT = 6; 95% CI, 4 to 10) at the cost of a superficial burning. Acupuncture was more effective than control in eight trials (54% vs. 35%; NNT = 6; 95% CI, 5 to 7); however, when only higher-quality studies were included, it was no better than control. The authors identified six opioid trials lasting four to 12 weeks, which found that 39% of patients achieved relief compared with 32% of control patients (NNT = 16; 95% CI, 10 to 35), but discontinuation due to side

effects was more common with opioids (27% vs. 5%; NNH = 5). In 10 trials of corticosteroid injections (overall poor quality), there was no difference in pain relief compared with controls. The authors found significant heterogeneity for many of the interventions. One trial each of gabapentin (Neurontin) and topical flurbiprofen (in tape form) found neither to be effective in achieving pain relief. The authors did not address function in their analyses.

Study design: Meta-analysis (randomized controlled trials)

Funding source: Government

Setting: Various (meta-analysis)

Reference: *Kolber MR, Ton J, Thomas B, et al. PEER systematic review of randomized controlled trials: management of chronic low back pain in primary care.* Can Fam Physician. *2021;67(1):e20-e30.*

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Continuous Glucose Monitoring Adds Little Benefit, Especially in Adults

Clinical Question

Do continuous glucose monitoring devices improve glucose control?

Bottom Line

Only patients using intensive insulin therapy who are unsure of when they are extremely hypoglycemic or hyperglycemic should use continuous glucose monitoring. In patients who have diabetes mellitus who are treated with intensive insulin regimens, continuous glucose monitoring modestly decreases A1C in short-term, unmasked studies. The effect goes away when pregnant women and children are excluded from the analysis. Patients with type 2 diabetes made up only 19% of the total number of patients and were not analyzed separately. This meta-analysis had many reasons for not combining the results of the 15 studies—differences in patient demographics, high risk of bias, and extreme heterogeneity of results across the studies. (Level of Evidence = 1a–)

Synopsis

The authors searched four databases, including a trial registry and the Cochrane Registry, to identify 15 randomized trials that enrolled a total of 2,461 patients and followed up for three to nine months. Only three of the included studies comprised patients with type 2 diabetes, all of whom were treated with multiple daily doses of insulin; they accounted for only 19% of the total number of patients. Two researchers decided on study eligibility and extracted the data independently. There was very high heterogeneity among the patient characteristics across the studies. Ages ranged from 11.4 to 67 years, patients had type 1 or type 2 diabetes, and pregnant women were enrolled. There was very high heterogeneity (I^2 greater than 90%) for most outcomes. The risk of bias was high for all of the studies because patients and the outcome assessors were aware of whether patients had continuous glucose monitoring. On average (with great variability), A1C decreased by 0.17% (which may translate into approximately 0.5 percentage points) with continuous glucose monitoring, but this difference went away when children and pregnant women were excluded. Time in appropriate glucose range, which is the percentage of time spent between 70 mg per dL and 180 mg per dL [3.89 and 9.99 mmol per L]), increased an average of 70 minutes per day. Time spent with severe hypoglycemia (less than 54 mg per dL [3.0 mmol per L]) was shorter with continuous glucose monitoring, although heterogeneity was 91.7% and there was evidence of publication bias. Time spent with severe hyperglycemia (more than 250 mg per dL [13.88 mmol per L]) was shorter with continuous glucose monitoring, with moderate heterogeneity among the studies.

Study design: Meta-analysis (randomized controlled trials)

Funding source: Unknown/not stated

Setting: Outpatient (any)

Reference: *Maiorino MI, Signoriello S, Maio A, et al. Effects of continuous glucose monitoring on metrics of glycemic control in diabetes: a systematic review with meta-analysis of randomized controlled trials.* Diabetes Care. *2020;43(5):1146-1156.*

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