Diabetic nephropathy

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Type 1 diabetes and late nephropathy

ACE inhibitors

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Summary

Mortality, end stage renal failure

Compared with placebo Captopril (an ACE inhibitor) reduces the combined outcome of renal transplant, end stage renal disease, or death over 3 years compared with placebo in people with type 1 diabetes and late nephropathy (high-quality evidence).

Note

We found no clinically important results about ACE inhibitors compared with angiotensin II receptor antagonists, or about the effects of combined ACE inhibitors with angiotensin II receptor antagonists, in people with type 1 diabetes and late nephropathy.

For GRADE evaluation of interventions for diabetic nephropathy, see table.

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Benefits

ACE inhibitors versus placebo:

We found one RCT, [26] which found that captopril significantly reduced the combined outcome of renal transplant, end stage renal disease, or death over 3 years compared with placebo (1 RCT, 409 people; combined outcome of renal transplant, end stage renal disease, or death: 23/207 [11%] with captopril *v* 42/202 [21%] with placebo; RR 0.50, 95% CI 0.18 to 0.70). [26] Diabetic nephropathy was defined as a urinary protein excretion rate greater than 500 mg a day and serum creatinine of 2.5 mg/dL (221 µmol/L) or less. [26]

ACE inhibitors versus angiotensin II receptor antagonists:

We found no systematic review or RCTs.

ACE inhibitors plus angiotensin II receptor antagonists:

We found no systematic review or RCTs.

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Harms

ACE inhibitors versus placebo:

One RCT found that, in people with type 1 diabetes and early nephropathy, hyperkalaemia occurred in three (1.5%) people taking ACE inhibitors, and in none of the people taking placebo. [26]

ACE inhibitors versus angiotensin II receptor antagonists:

We found no RCTs.

ACE inhibitors plus angiotensin II receptor antagonists:

We found no RCTs.

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Comment

Clinical guide:

Most people should be offered initial treatment with an ACE inhibitor at a low dose, and then titrated to the maximum tolerated dose. Kidney function should be monitored during initiation of treatment and dose escalation. One expert has recommended continuing the ACE inhibitor (or angiotensin II receptor antagonist), unless the serum creatinine increases by more than 30%; greater increases could lead to renal arterial stenosis. [21]

References

21. Bakris GL. A practical approach to achieving recommended blood pressure goals in diabetic patients. *Arch Intern Med* 2001;161:2661–2667. [PubMed]

26. Lewis EJ, Hunsicker LG, Bain RP, et al. The effect of angiotensin-converting-enzyme inhibition on diabetic nephropathy. The Collaborative Study Group. *N Engl J Med* 1993;329:1456–1462. [PubMed]