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# Doxycycline for osteoarthritis of the knee or hip

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## Abstract

**Background:** Osteoarthritis is a chronic joint disease that involves degeneration of articular cartilage. Pre-clinical data suggest that doxycycline might act as a disease-modifying agent for the treatment of osteoarthritis, with the potential to slow cartilage degeneration. This is an update of a Cochrane review first published in 2009.

**Objectives:** To examine the effects of doxycycline compared with placebo or no intervention on pain and function in people with osteoarthritis of the hip or knee.

**Search methods:** We searched CENTRAL (The Cochrane Library 2008, issue 3), MEDLINE, EMBASE and CINAHL up to 28 July 2008, with an update performed at 16 March 2012. In addition, we checked conference proceedings, reference lists, and contacted authors.

**Selection criteria:** We included studies if they were randomised or quasi-randomised controlled trials that compared doxycycline at any dosage and any formulation with placebo or no intervention in people with osteoarthritis of the knee or hip.

**Data collection and analysis:** We extracted data in duplicate. We contacted investigators to obtain missing outcome information. We calculated differences in means at follow-up between experimental and control groups for continuous outcomes and risk ratios (RR) for binary outcomes.

**Main results:** We identified one additional trial (232 participants) and included two trials (663 participants) in this update. The methodological quality and the quality of reporting were considered moderate. At end of treatment, clinical outcomes were similar between the two treatment groups, with an effect size of -0.05 (95% confidence interval (CI) -0.22 to 0.13), corresponding to a difference in pain scores between doxycycline and control of -0.1 cm (95% CI -0.6 to 0.3 cm) on a 10-cm visual analogue scale, or 32% versus 29% improvement from baseline (difference 3%; 95% CI -5% to 10%). The effect size for function was -0.07 (95% CI -0.25 to 0.10), corresponding to a difference between doxycycline and control of -0.2 (95% CI -0.5 to 0.2) on the Western Ontario and McMaster Universities Arthritis Index (WOMAC) disability subscale with a range of 0 to 10, or 24% versus 21% improvement (difference 3%; 95% CI -3% to 10%). The difference in changes in minimum joint space narrowing assessed in one trial was in favour of doxycycline (-0.15 mm; 95% CI -0.28 to -0.02 mm), which corresponds to a small effect size of -0.23 standard deviation units (95% CI -0.44 to -0.02). More participants withdrew from the doxycycline group compared with placebo due to adverse events (RR 2.28; 95% CI 1.06 to 4.90). There was no evidence that participants in the doxycycline group experienced more serious adverse events than those in the placebo group, but the estimate was imprecise (RR 1.07; 95% CI 0.68 to 1.68).

**Authors' conclusions:** In this update, the strength of evidence for effectiveness outcomes was improved from low to moderate and we confirmed that the symptomatic benefit of doxycycline is minimal to non-existent, while the small benefit in terms of joint space narrowing is of questionable clinical relevance and outweighed by safety problems. The CIs of the summary estimates now exclude any clinically relevant difference in improvement of symptoms and the small benefit in terms of joint space narrowing does not outweigh the harms.

## Update of

[Doxycycline for osteoarthritis of the knee or hip.](#)

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