

Lack of Efficacy of Paracetamol (Acetaminophen) for Low Back Pain and Osteoarthritis

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Paracetamol, also known as acetaminophen, is the most widely used over-the-counter medication to treat back pain and osteoarthritis [1]. Clinical guidelines consistently recommend it as first line analgesic medication due to its safety, effectiveness and low cost [2, 3]. A recently published systematic review and meta-analysis questions the efficacy of paracetamol and calls for a revision of clinical guidelines [4]. The systematic review included 13 randomized placebo-controlled trials investigating the safety and efficacy of paracetamol in 5,366 patients with low back pain (3 trials) or with hip or knee osteoarthritis (10 trials) [4]. No trial enrolling patients with neck pain were identified. The meta-analysis suggested that paracetamol is not effective in reducing pain and disability, or in improving quality of life in patients with low back pain. For hip and knee osteoarthritis, paracetamol has a statistically significant effect on pain and disability, but the effect is too small to be clinically worthwhile. These results were based on high quality evidence, and therefore further research is unlikely to change this conclusion [4].

The safety of paracetamol was recently questioned in a systematic review of long-term observational evidence, which showed an overall 28% increased risk of mortality and up to 2 times greater risk of cardiovascular adverse events, gastrointestinal bleeds and impaired kidney function with the use of paracetamol in the general adult population [5]. Paracetamol is also associated with serious liver toxicity, including liver failure, at doses of more than 4 g/day [1]. The above noted systematic review also found that paracetamol at regular doses of up to 4 g/day can increase the risk of abnormal results on liver function tests up to four times (an abnormal test was defined as hepatic enzyme activity 1.5 times or more than the upper reference range) [4].

However, this result is based on the short-term use of paracetamol, and the clinical meaning of this transient alteration is unknown. The review also revealed that adverse side effects varied across trials, but no differences were found in

terms of the number of patients using paracetamol reporting any adverse event, or to adverse events, compared to those using a placebo. Similarly, adherence to treatment schedule rates was similar between those taking paracetamol compared with those using a placebo [4].

Low back pain and osteoarthritis are the leading causes of global disability, and account for 10-20% of all consultations with a general practitioner [6]. This systematic review contributes to the recent research that has highlighted opportunities to improve the health care provided for both conditions. Primary care patients with osteoarthritis typically skip the first line therapy with exercise and weight control [7], and instead rapidly progress to referral for imaging or surgery. Patients with low back pain often get referrals for opioid medicines and imaging [8]. A more liberal policy of imaging for patients with back pain does not provide better clinical outcomes, but the over-reporting of incidental findings may cause unnecessary concern to the patient and trigger unnecessary tests and treatments. Clinicians should carefully weigh benefits and harms when making treatment decisions.

Paracetamol has minimal or no benefit for patients with low back pain or osteoarthritis, but may cause harm. In this context, its continued use for these prevalent musculoskeletal diseases may seem hard to justify. There are other effective treatment options for patients with low back pain and osteoarthritis. Reassurance of the benign nature of low back pain, together with advice and educational programs are known to be effective and help reduce recovery time [9]. Other treatments include physical therapies such as spinal manipulation and exercise as well as psychological therapies, such as cognitive behavioral therapy. Intra-articular corticosteroids are effective in short-term pain reduction for knee osteoarthritis, and land-based or water-based aerobic exercises, strength training, weight management and oral or topical anti-inflammatory medicines have also been shown to

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provide benefits for patients with lower limb osteoarthritis [3].

The editorial that accompanied this systematic review in *The BMJ* emphasized the importance of non-pharmacological options for musculoskeletal conditions but warns that adherence to exercise and access to physiotherapy are still poor in the United Kingdom National Health Service [10]. In the United States, same is also true, and only about 60% of patients with osteoarthritis report receiving needed rehabilitation services, common barriers being lack of service coverage by the health plan and high costs. Musculoskeletal conditions, such as low back pain and osteoarthritis, are still largely under-recognized as a health priority. Thus, it is necessary to take stock of the evidence for these common conditions, and make sure people are receiving appropriate care.

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