The purpose of this systematic review is to evaluate the safety and efficacy of intravenous (IV) lidocaine for the treatment of acute pain in adult patients. The PubMed database was searched for randomized controlled trials, retrospective cohort studies, case series, and case reports evaluating use of IV lidocaine for the treatment of acute pain in adult patients, published between January 1970 and January 2018. The primary outcome was pain reduction via Visual Analog Scale, Verbal Rating Scale, or Numeric Rating Scale among patients treated with IV lidocaine and placebo or active controls. Safety outcomes included both nonserious and serious adverse events. A total of 347 titles and abstracts were screened and after full-text review, 13 studies met the inclusion criteria, involving 512 patients. The four active controls studied were IV morphine, IV ketorolac, IV dihydroergotamine (DHE), and IV chlorpromazine (CPZ). The dosing of IV lidocaine varied among
studies between a weight-based dose of 1- to 2-mg/kg bolus, a fixed bolus dose of 50 to 100 mg, and a 1-mg/kg/hour continuous infusion. Monitoring of serum lidocaine concentrations was not routinely done. Intravenous lidocaine had superior efficacy to morphine for renal colic and critical limb ischemia, superior efficacy to DHE for acute migraine, and equivalent efficacy to ketorolac for acute radicular lower back pain. However, lidocaine was less effective than CPZ for the treatment of acute migraine. The most common adverse event reported among all studies included neurologic effects, such as altered mental status and slurred speech. Due to the inconsistency in dosing, length of administration, and lack of serum monitoring, the absolute safety of IV lidocaine for acute pain is unknown. Larger, prospective studies are needed before the routine use of IV lidocaine can be recommended for all types of acute pain.

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