Preoperative Predictors of Poor Postoperative Pain Control: Systematic Review and Meta-Analysis

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Introduction

Inadequate postoperative pain control is common and is associated with poor clinical outcomes. The goal of this systematic review was to identify preoperative predictors of poor postoperative pain control in adults undergoing inpatient surgery.

Methods

MOOSE standards were followed. MEDLINE, EMBASE, CINAHL, and PsychInfo from inception until October 13th 2017, supplemented with a grey literature search and consultation with a pain expert. Studies in any language were included if they evaluated postoperative pain using a validated instrument (e.g. visual-analogue-scale for pain) in adults (=>18 years) and reported a measure of association between postoperative pain and at least one preoperative predictor during the hospital stay. Articles were screened and data extracted by 2 independent reviewers. Measures of association for each preoperative predictor were pooled using random effects models. Study quality was assessed using a component-based approach.

Results

Thirty-three studies representing 53,362 patients were included in this review (Figure 1). Significant preoperative predictors of poor postoperative pain control included younger age (OR 1.18 [95%CI 1.05-1.32]), female sex (OR 1.29 [95%CI 1.17-1.43]), smoking (OR 1.33 [95%CI 1.09-1.61]), history of depressive symptoms (OR 1.71 [95%CI 1.32-2.22]), history of anxiety symptoms (OR 1.22 [95%CI 1.09-1.36]), sleep difficulties (OR 2.32 [95%CI 1.46-3.69]), higher BMI (OR 1.02 [95%CI 1.01-1.03]), presence of preoperative pain (OR 1.21 [95%CI 1.10-1.32]), and use of preoperative analgesia (OR 1.54 [95%CI 1.18-2.03]) (Figure 2). Pain catastrophizing, ASA status, chronic pain, marital status, socioeconomic status, education, previous surgical history, preoperative pressure pain tolerance and orthopedic surgery (vs abdominal surgery) were not associated with poor postoperative pain control (Figure 3). Study quality was generally high, although appropriate blinding of exposure during outcome ascertainment was often limited in many studies.
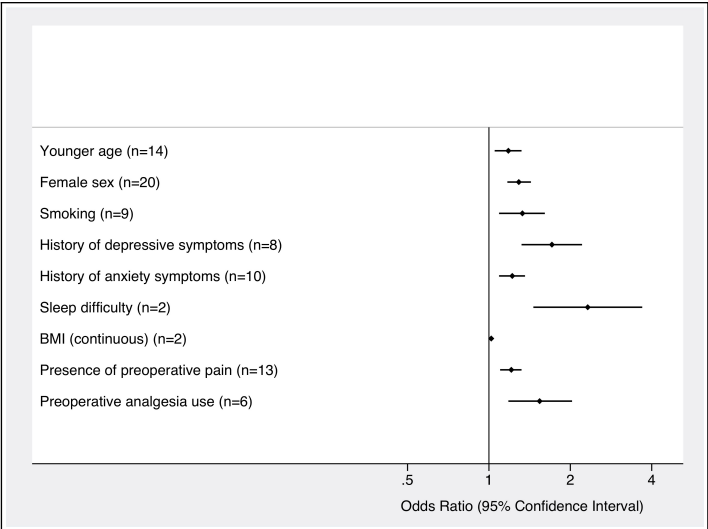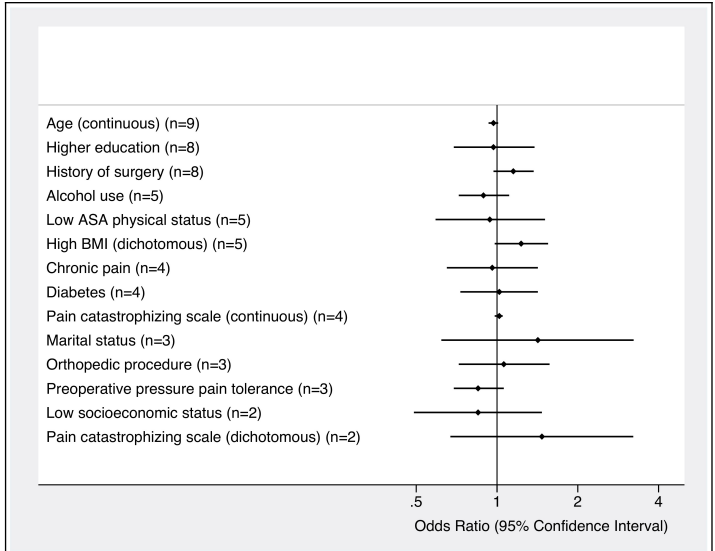

Figure 3. Summary Forest Plot of Non-Significant Preopertive Predictors of Poor Postoperative Pain Control

Conclusions

Nine significant predictors of poor postoperative pain control were identified, which may be potentially important factors to consider when developing pre- and peri-operative strategies to improve pain outcomes.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) describe significant preoperative predictors of poor postoperative pain control, 2) understand early identification of predictors in patient at risk of postoperative pain may allow for more effective interventions, better pain management and decrease reliance on medications (particularly opioids) and 3) recognize the paucity of research in neurosurgery on preoperative predictors of poor postoperative pain control.

Figure 2. Summary Forest Plot of Significant Preoperative Predictors of Poor Postoperative Pain Control