

Purpose: Pain management for hospitalized patients with liver disease is challenging due to the lack of specific drug therapy for pain and treatment guidelines in this patient population. The purpose of this study was to observe different pain medications used in patients with liver disease whom presented to the hospital with pain.

Methods: This retrospective chart review of admitted hospital patients included patients aged 18 to 89 years between the dates of April 1st, 2018 and April 1st, 2021 with an ICD 10 code for liver disease. Patients must have been hospitalized for a minimum of 72 hours, possessed a diagnosis of liver disease, and received a pain medication within the initial 72 hours of admission. Data collected included baseline characteristics, Child Pugh Scores, pain scores, pain sources, and lab values. The pain score scale referenced is the Numerical Pain Rating Scale (NPRS), an 11-point scale broken into mild (1-3), moderate (4-6), and severe pain (7-10). The goal of this study was to gather information on specific pain medications being utilized in correspondence to pain scores and a liver disease diagnosis. The Springfield Committee for Research Involving Human Subjects. Investigational Review Board approval number is 024119.

Results: Sixty-seven patients were admitted with a liver disease diagnosis in the reviewed timeframe. Thirty-three patients met the specific inclusion criteria to be reviewed. Of those thirty-three patients, Child Pugh A 8 (24%), Child Pugh B 16 (49%), and Child Pugh C 9 (27%). The most common ICD 10 code was K70.31 (alcoholic cirrhosis with ascites) with 11 (34%) patients. The average pain score of the 33 patients reviewed before administration of any pain medications was 8.31 with a standard deviation of 1.51 (scores ranged 4 – 10). The average pain score post administration of the first pain medication was 6.46 ± 2.70 (0 – 10). Twenty four patients reported abdominal pain upon admission. The average amount of morphine milligram equivalents (MME) per patient in the first 24 hours was 18.23 ± 17.87 mg (0-76.25) per patient. Overall, 232 doses of pain medications were administered in 72 hours to thirty-three patients and greater than 75% were opioids. Comparing the intravenous (IV) medications used, more were administered in the first 24 hours (61 doses, 60%) than collectively over the following 48 hours (45 doses, 35%). Throughout this 72 hour period, no patient exceeded 3,000 mg of acetaminophen in a 24-hour period, given that the recommended amount of acetaminophen is 2-3 grams based on Child Pugh score.

Conclusion: As a clinician, the data from this study can be used as a sign that a large variety of pain medications are being used for patients with liver disease. With this, there should be a goal to narrow down what medications are appropriate in specific states of liver disease. Pain medications are reliant on dose adjustments based on patient pharmacodynamics and drug pharmacokinetics. Through collaboration of physicians treating pain in patients with liver disease and pharmacists providing knowledge in drug pharmacodynamics and pharmacokinetics, institutional treatment protocols and disease state guidelines can be developed.