



**Service Priorities and Programmes
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Predictive Factors related to Postoperative Pain in Liver Cancer Patients

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Introduction

Undermanaged postoperative pain remains to be a clinical challenge for the past 20 years. Effective postoperative pain management reduces postoperative morbidity and improves recovery, maximizes quality of life of patients and enhances the cost-effectiveness of surgery.

Objectives

This study aimed to improve clinical outcomes and quality of life of liver cancer patients following open liver resection by determining the effects of predictive factors on postoperative pain.

Methodology

144 patients (31-85 years old; mean age: 60.73 ± 10.738 years; 110 men, 34 women) diagnosed with primary or metastatic liver cancer and underwent open liver resection at United Christian Hospital between 2008 and 2012 were included. Stepwise multiple regression was performed to analyze data including (1) basic demographic profile (age at operation (yr) and sex), (2) preoperative factors (alcoholic status, hepatitis B/C virus infection, α -fetoprotein value, indocyanine green retention value, experience of previous major, ultra-major or abdominal surgery and the origin of liver tumor), (3) intraoperative factors (liver segment(s) involved in resection, operation duration (mins), estimated blood loss (mL) and IV opioids given intraoperatively), and (4) pain intensity on postoperative day 0 (PD0) on a verbal numeric rating scale (VNRS).

Result

Age at operation was the strongest predictor of postoperative pain on PD0 while other predictors showed no correlation with it. The coefficient of determination (R^2) was 0.140. The observed F-ratio was 9.420 (df = 1, 58, $P = 0.003$). Only the correlation coefficient of age at operation demonstrated moderate correlation -0.366 ($P = 0.007$) with average VNRS on PD0. The regression constant was 8.358 and the partial regression coefficient of age at operation (yr) was -0.073 ($P = 0.003$). The regression coefficient quantified the relationship with the standard error (SE) at 0.024 and 95%

confidence intervals (CI) between -0.120 and -0.025. The predicted pain score on PD0 for liver cancer patients undergoing open liver resection can be estimated by the following equation, $8.358 + (-0.073) * \text{age at operation (yr)}$. This result indicates that a 10-year increase in age at operation is associated with a mean decrease of 0.73 on VNRS. This helps target liver cancer patients at higher risks of postoperative pain and is useful for designing modalities in postoperative pain management. This can improve clinical outcomes by optimizing postoperative pain control. Thus, quality of life of the patients during postoperative period and the cost-effectiveness of the surgery can be enhanced.