

The Severity of Perioperative A1c and Predicting the Postoperative Complications in Spinal Surgery

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Introduction

8.1 million cases of undiagnosed DM were reported in 2012 by Centers for Disease Control and Prevention. The relationship between hemoglobinA1c (HbA1c) and surgical outcome had been studied in different surgeries. However, it has not enough conducted outcome study with spinal surgery. To improve patient outcomes in spine surgery, the importance of identifying ideal pre operative HbA1c would be variable. The HbA1c does not require fasting prior to lab draw, and the result reflects eight to 12 weeks of prior glycemia. We aim to establish a target HbA1c guideline for ultimate preoperative control of patients with diabetes mellitus undergoing spinal surgery.

Methods

A retrospective cohort study was conducted to evaluate the association between preoperative HbA1c levels and adverse events in spinal surgery at the University of Missouri Health Care Neurosurgery from July 2016 to June 2017. HbA1c levels are widely accepted for the diagnostic tool which is categorized as follows: normal (< 5.7%), prediabetes (5.7% -6.4%)and diabetes (>6.4%). Perioperative complications were defined as the following: stroke, MI, death, UTI, DVT, PE, wound infection, nonunion, failure of hardware, and cerebral spinal fluid leak.

Learning Objectives

To learn importance of preoperative diagnosis of diabetes and emphasize preoperative hyperglycemia control.

Results

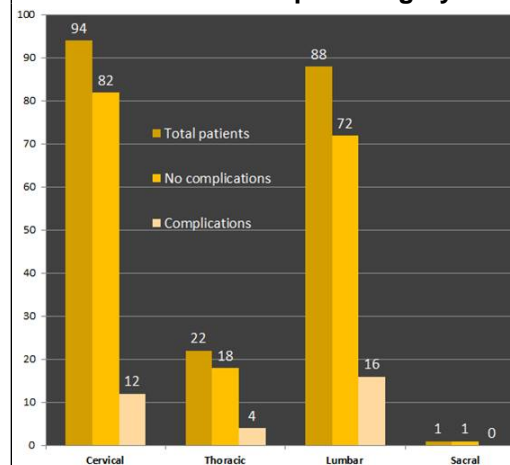
A total of 175 patients were reviewed. The HbA1c level were normal, pre-diabetic, and diabetic were 80, 63 and 32. Perioperative complications were occurred 11/80(13.75%), 14/63(22.2%) and 10/32(31.25%).

The attributable risk in pre-diabetic patients compared to non-diabetic patients was 8.47%, and the relative risk was 1.6. The attributable risk in diabetic patients compared to non-diabetic patients was 17.5%, and the relative risk was 2.27.

Conclusions

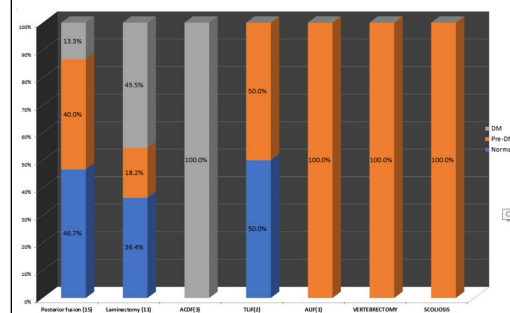
Pre-diabetes exposure increased the incidence of perioperative complications by 8.47%, and pre-diabetic patients were 1.6 times more likely to develop perioperative complications than non-diabetic patients. Diabetes exposure increased the incidence of perioperative complications by 17.5%, and diabetic patients were 2.27 times more likely to develop perioperative complications than non-diabetic patients.

Distribution of spine surgery



Total number of spine surgery with location, versus complication

Type of spine procedures and complications of relationship of A1c value



Posterior fusion(15), Laminectomy(11), ACDF(3), TILF(2), ALIF(1), Verterectomy&fusion(1), Scoliosis(1). Each column demonstrated distribution of A1c value. Blue: Normal(HbA1c<5.7%), Orange: Pre-DM(5.7%<HbA1c<6.4%), DM(HbA1c6.4%). I

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