



Correlation of Patient-Reported Allergies with Postoperative Outcomes and Cost of Admission for Cervical and Lumbar Spinal Surgery

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Introduction

Compiling a list of allergies is an important part of the medical history. Patients who self-report allergies were previously shown to have a higher prevalence of Axis I disorders such as anxiety and somatization. In addition, previous studies have found that patient-reported allergies correlate with poorer outcomes after hip and knee arthroplasty. Therefore, we hypothesized that patient-reported allergies directly correlate with inferior postsurgical quality of life outcomes and higher cost of admission following cervical or lumbar spinal surgery.

Methods

Our retrospective cohort study was conducted at a single tertiary-care institution and included patients undergoing either cervical or lumbar decompression between January 2009 and December 2014. The primary outcome measure was a change in quality of life as determined by the EuroQol 5-Dimensions (EQ-5D), Pain Disability Questionnaire (PDQ), and Patient Health Questionnaire 9 (PHQ-9) above the minimal clinically important difference. Data was collected using an institutional database of prospectively-collected patient-reported health measures. Multivariable regression analyses were used to assess the effect of patient-reported allergies on quality of life as measured by the aforementioned measures.

of admission for both cervical ($\beta = \$3,369$, $p < 0.01$) and lumbar ($\beta = \$2,754$, $p < 0.0001$) patients.

Conclusions

Surprisingly, we found that patients who reported more allergies experienced greater reductions in self-reported pain burden after both cervical and lumbar spinal surgery. We also found that higher numbers of allergies were associated with higher costs of care during admission.

improvements in the PDQ exceeding the MCID for both cervical (OR 2.12, $p=0.02$) and lumbar (OR 1.34, $p=0.02$) patients. No significant correlations were found between number of allergies and overall quality of life (EQ-5D) or mental health (PHQ-9) scores. Log-transformed number of allergies was associated with significantly increased cost

Learning Objectives

By the conclusion of this session, participants should be able to:

- 1) Describe the effect of patient-reported allergies on clinical outcomes following spine surgery.
- 2) Discuss, in small groups, reasons how increased patient-reported allergies may correlate to quality of life and financial outcomes.
- 3) Identify that spine surgery as a treatment may not benefit all patients equally.

Results

640 cervical and 4,805 lumbar patients were included. Cervical and lumbar patients had an average age of 56.5 and 59.1 years, respectively, and were admitted for a median of 1 and 3 days. For both cervical and lumbar patients, the most common type of self-reported allergy was to a medication (median of 1 reported allergy), while the median total reported allergies was 2. Cervical patients improved in the PDQ from an average of 80.8 to 58.7 following surgery ($p<0.0001$), while lumbar patients improved from an average of 79.9 to 58.4 ($p<0.0001$). After adjusting for covariates, the log-transformed number of allergies was associated with superior PDQ outcomes for both cervical ($\beta=-9.6$, $p=0.05$) and lumbar ($\beta=-4.02$, $p=0.04$) patients. The log-transformed number of allergies was associated with increased odds of

Admission Costs and Quality of Life Improvements

Table 1. Admission Cost and Quality of Life Improvement Multivariable Regression Models

Cervical Surgery Outcome [†]	Covariate	β Coefficient	p -value
Δ PDQ	Preoperative PDQ	-0.34	< 0.0001*
	Follow-Up (months)	0.20	0.16
	Age	0.40	0.01*
	Race		
	White	[ref]	[ref]
	Black	-10.4	0.11
	Other	23.1	0.01*
	log(Total Number of Allergies)	-9.6	0.05*
Admission Cost (\$)	Preoperative PDQ	40	0.01*
	Age	62	0.10*
	CCI	1,595	< 0.0001*
	log(Total Number of Allergies)	3,369	< 0.01*

Lumbar Surgery Outcome ¹	Covariate	β Coefficient	<i>p</i> -value
APDQ	Preoperative PDQ	-0.35	< 0.001*
	Follow-Up (months)	0.15	< 0.01*
	BMI	0.22	0.06
	log(Total Number of Allergies)	-4.02	0.04*
Admission Cost (\$)	Female	1.210	< 0.001*
	CCI	1,032	< 0.001*
	log(Total Number of Allergies)	2,754	< 0.001*

PDQ, Pain Disability Questionnaire; BMI, Body Mass Index; CCI, Charlson Comorbidity Index.
 †Decrease in PDQ represents improvement.
 *Statistically significant: $p < 0.05$.

Admission costs and quality of life improvements in cervical and lumbar surgery patients

Minimal Clinically Important Difference Model

Table 2. Minimal Clinically Important Difference Multivariable Regression Model

Cervical Surgery Outcome	Covariate	OR [95% CI]	p-value
ΔPDQ > MCID	Preoperative PDQ	1.01 [1.00–1.02]	< 0.01*
	Follow-Up (months)	0.99 [0.97–1.01]	0.36
	log(Total Number of Allergies)	2.12 [1.09–4.11]	0.02*

Lumbar Surgery Outcome	Covariate	OR [95% CI]	p-value
ΔPDQ >MCID	Preoperative PDQ	1.01 [1.01 – 1.02]	< 0.0001*
	Follow-Up (months)	0.99 [0.99 – 1.00]	0.05
	log(Total Number of Allergies)	1.34 [1.04 – 1.73]	0.02*

*Statistically significant: $p < 0.05$.

Minimally clinically important differences
multivariable regression model

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