Variation in the Distribution of Weight-Related Severe Medical Problems by Insurance Status in Mega-Obese Patients

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Introduction

The incidence of extreme obesity, with Body Mass Index (BMI) >50, is increasing rapidly in the USA. Such massive obesity can remodel dramatically both pulmonary and cardiac physiology by decreasing expiratory reserve volume, forced expiratory volume and functional residual capacity, as well as causing left ventricular dilation even in mildly obese individuals. [1,2] Metabolic derangements, including Type II diabetes mellitus, hepatobiliary and musculoskeletal problems [5] are increased also. Managing these mega-obese patients, with severe weight-related co-morbidities exacerbating underlying cardiovascular, pulmonary, metabolic, psychological and musculoskeletal risks, is a progressively difficult challenge for every healthcare provider. This is true especially for Emergency Physicians, who see these fragile and complex patients in the most acute stages of illness. Thus, every clinical insight into the mega-obese can be life-saving information for the ER doctor. Nevertheless, the interaction of weight-induced medical problems with the insurance status of morbidly obese patients has not been investigated. The objective of this study, therefore, was to examine variations in the distribution of obesity co-morbidities among the most extremely overweight patients according to type of health insurance.

Methods

Pre-operative data on 1,673 patients from the Surgical Review Corporation's BOLD database who were about to undergo duodenal switch/pancreatico-biliary bypass was examined in five groups: Medicaid (n=77), Medicare (n= 313), Private insurance (n=1,171), and Self-Pay (n=59). Continuous variables were tested by analysis of variance. Dichotomous variable distribution was assessed by the Chi-squared equation.

Results

Table 1. Mega-Obesity Variation in Demographics and Body Mass by Insurance Status

	Medicaid	Medicare	Private Insurance	Self-Pay	p value
Age	39+-9	51+-12	43+-11	48+-12	0.1197
BMI	56+-10	54+-12	51+-9	50+-9	0.2856
Weight	158+-34	152+-38	148+-31	140+-32	0.1891
Sex (F/M %)	82/18%	70/30%	72/28%	81/19%	0.09

Table 2. Mega-Obese Variation in Musculoskeletal Co-Morbidities by Insurance Status

	Medicaid	Medicare	Private Insurance	Self-Pay	p value
Musculoskeletal Pain	61.04%	69.97%	43.55%	54.24%	<0.0001
Back Pain	57.14%	67.73%	59.09%	50.85%	0.0151
Fibromyalgia	7.79%	10.86%	3.42%	3.39%	<0.0001
Lower Extremity Edema	42.86%	57.51%	45.43%	64.41%	<0.0001

Results *(cont'd)*

Table 3. Mega-Obesity Variation in Cardiopulmonary Co-Morbidities by Insurance Status

	Medicaid	Medicare	Private Insurance	Self-Pay	p value
Hypertension	58.44%	72.84%	60.8%	55.93%	0.0006
Angina	1.3%	6.07%	3.16%	5.08%	0.0588
CHF	0	11.18%	2.65%	6.78%	<0.0001
Ischemic Heart Disease	3.9%	7.99%	2.39%	6.78%	<0.0001
DVT/PE	3.9%	6.39%	2.99%	5.08%	0.0423
Pulmonary Hypertension	11.69%	14.7%	12.21%	23.73%	0.0573
Peripheral Vascular Disease	0	4.15%	1.79%	6.78%	0.0048
Obstructive Sleep Apnea	62.34%	75.52%	57.73%	62.71%	<0.0001
Obesity Hypoventilation syndrome	2.6%	4.79%	1.37%	0	0.0012
Asthma	28.57%	25.88%	22.12%	27.12%	0.2893

Table 4. Mega-Obese Variation in Hepato-Biliary and Abdominal Co-Morbidities by Insurance Status

	Medicaid	Medicare	Private Insurance	Self-Pay	p value
Abdominal Hernia	5.19%	19.49%	8.11%	16.95%	<0.0001
Abdominal Skin Pannus	22.08%	26.84%	17.59%	42.37%	<0.0001
Cholelithiasis	23.38%	26.52%	20.24%	30.51%	0.0381
GERD	61.04%	55.27%	48.76%	52.54%	0.0515
Liver Disease	5.19%	3.83%	6.83%	6.78%	0.2616
Stress Urinary Incontinence	48.05%	41.21%	31.77%	52.54%	<0.0001

Results *(cont'd)*

Table 5. Mega-Obese Variation in Metabolic and Hormonal Co-Morbidities by Insurance Status

	Medicaid	Medicare	Private Insurance	Self-Pay	p value
Diabetes	37.77%	55.27%	38.68%	47.46%	<0.0001
Hyperlipidemia	28.57%	54.63%	42.7%	47.46%	<0.0001
Irregular Menses	22.08%	36.42%	23.48%	38.98%	<0.0001
PCOS	7.79%	3.83%	8.2%	11.86%	0.036
Pseudotumor Cerebri	1.3%	0.32%	1.62%	1.69%	0.3642
Gout	5.19%	6.39%	3.84%	6.78%	0.206

Table 6. Mega-Obese Variation in Mental and Functional Co-Morbidities by Insurance Status

	Medicaid	Medicare	Private Insurance	Self-Pay	p value
Mental Health Diagnosis	15.58%	18.85%	9.56%	10.17%	<0.0001
Disabled Functional Status	9.09%	18.21%	4.18%	8.47%	<0.0001
Depression	54.55%	50.16%	36.29%	45.76%	<0.0001
Psychological Impairment	16.88%	24.6%	13.49%	11.86%	<0.0001

Table 7. Mega-Obese Variation in Social Behavior by Insurance Status

	Medicaid	Medicare	Private Insurance	Self-Pay	p value
Alcohol Use	23.38%	26.2%	38.34%	23.73%	<0.0001
Substance Abuse	1.3%	2.56%	0.43%	0	<0.0001
Tobacco Use	6.49%	7.99%	5.72%	5.08%	0.5077
Unemployed	61.04%	80.83%	4.77%	13.56%	<0.0001

Conclusions

Medicare patients were oldest, did not have the highest BMI, and yet had the highest rate of cardiopulmonary disease as well as other less acute conditions. Most cardiovascular conditions were lowest for Medicaid patients, in spite of their having the highest weight and BMI. Self-Pay suffered cardiac co-morbidities second only to Medicare patients. Private patients had the highest rates of alcohol use and liver disease, but cardiac co-morbidities were less frequent. The results of this study identify statistically and clinically significant variation in the distribution of life-threatening obesity co-morbidities according to the type of health insurance carried by mega-obese patients. The findings of this study should heighten index of suspicion in clinical management of these patients in the emergency department. This advanced knowledge may improve ER outcomes for mega-obese patients.