



Complications and Outcomes of Obese Patients Hospitalized with COVID-19

Anita Shallal MD¹, Austin Morrison PharmD², Indira Brar MD¹, Geehan Suleyman MD¹
 Henry Ford Health System¹, Detroit, MI; Moffitt Cancer Center, Tampa FL²

Anita Shallal, MD
 2799 W. Grand Blvd, Detroit, MI 48202
 ashalla2@hfhs.org
 313-850-7032

INTRODUCTION

- Coronavirus disease 2019 (COVID-19) has greatly affected the US, where obesity is present in over 40% of the population
- Evidence suggests that obesity is associated with a higher risk of developing severe disease and complications
- We explored the relationship between body mass index (BMI) and outcomes in hospitalized patients with COVID-19

METHODS

- **Study Design**
 - Retrospective cohort, five-hospital health system
- **Subjects**
 - Study population included obese (BMI ≥ 30) and non-obese (BMI < 30) patients hospitalized with COVID-19 at Henry Ford Health System from March 2020 through May 2020
- **Analysis**
 - Performed using SPSS software version 24.0 (IBM)
- **Primary Endpoint**
 - Evaluate outcomes and complications, in particular mechanical ventilation

RESULTS

- Younger patients were more obese compared to older patients
- Although 37% of obese patients were intubated, obesity was not a significant risk factor for mechanical ventilation (MV)
- In the regression analysis, age over 60 (p=0.004), tachypnea at admission (p<0.001), acute kidney injury (p<0.001), and diabetes (p=0.010) were significantly associated with need for MV, but not BMI

Table 1. Clinical Characteristics of patients with BMI < 30 and BMI ≥30

	BMI < 30 N=261 (%)	BMI ≥ 30 N=324 (%)	P value
Demographics			
Male gender	132 (50.6)	170 (52.5)	0.649
Black race	146 (55.9)	254 (78.4)	<0.001
Age (median, IQR)	69 (56, 76.75)	54.5 (44.75, 62.25)	<0.001
Age >60	212 (81.2)	161 (49.7)	<0.001
BMI (kg/m ² median, IQR)	26 (23.1-28)	36.5 (32.7-41.7)	<0.001
Comorbid conditions			
Asthma	24 (9.2)	44 (13.6)	0.100
COPD	56 (21.5)	55 (17.0)	0.169
Obstructive sleep apnea	10 (3.8)	66 (20.4)	<0.001
Diabetes mellitus	91(34.9)	152 (46.9)	0.003
Hypertension	188 (72)	249 (76.9)	0.182
Chronic kidney disease	139 (53.3)	150 (46.3)	0.094
ESRD	20 (7.7)	18 (5.6)	0.292
Solid organ transplantation	6 (2.3)	8 (2.5)	0.893
Coronary artery disease	51 (19.5)	55 (17)	0.423
Congestive heart failure	51 (19.5)	52 (16)	0.270
Cancer	51 (19.5)	30 (9.3)	<0.001
Tobacco use	99 (37.9)	99 (30.5)	0.061
Baseline respiratory vital signs			
Oxygen saturation	94 (90,96)	93 (88.75, 95)	0.493
Respiratory rate > 22	158 (60.5)	180 (55.6)	0.225
Treatment			
Antibiotics (ED)	179 (70.2)	255 (79.2)	0.015

[BMI, body mass index; COPD, chronic obstructive pulmonary disease; ESRD, end-stage renal disease]

RESULTS

Table 2. Comparison of Treatment, Complications and Outcomes of patients with BMI < 30 and BMI > 30

	BMI < 30 N=261 (%)	BMI ≥ 30 N=324 (%)	P value
Complications			
Mechanical ventilation	89 (34.1)	121 (37.3)	0.416
Vasopressors for shock	43 (16.5)	85 (26.2)	0.004
RRT	9 (3.4)	30 (9.3)	0.005
ARDS	83 (31.8)	118 (36.5)	0.231
Acute kidney injury	131 (50.2)	165 (50.9)	0.860
Discharged			
Disposition	127	215	
Home	104 (81.9)	199 (92.6)	0.005
Rehab facility	14 (11)	13 (6)	0.099
Other	9 (7.1)	3 (1.4)	0.011
30-day hospital readmission	18 (14.3)	10 (4.7)	0.001
30-day mortality	133 (51.0)	93 (29.0)	<0.001

[BMI, body mass index; RRT; renal replacement therapy, ARDS, acute respiratory distress syndrome]

CONCLUSION

- In our cohort, a high frequency of obesity is noted among black and younger patients
- Obese patients were more likely to require intensive treatments, including renal replacement therapy and vasopressors, but not MV
- Complications and outcomes in COVID-19 should be further evaluated by BMI categories

Disclosure: All authors report no conflicts of interest