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Title: Role of Gastroesophageal Reflux Disease in Patients Admitted for a Primary Diagnosis of Pulmonary Hypertension

Authors: Afif Hossain, MD Anmol Mittal MD, Sarah Hossain BA, Sushil Ahlawat MD

Background: Pulmonary hypertension (pHTN) is a severe, chronic, and fatal disease which has a high mortality rate coupled with a significant hospital burden. An area of pHTN that has not been extensively studied or understood is the gastrointestinal complications seen with pHTN. Though there is an increased rate of gastroesophageal reflux disease (GERD) in patients with pHTN, comorbidities and predispositions to GERD have not been studied. Our aim is to further understand the role of GERD in patients with pHTN.

Methods: The National Inpatient Sample 2001-2013 database was queried for patients with a diagnosis of a pHTN using International Classification of Diseases, Ninth Revision (ICD-9) codes. GERD, viral hepatitis, diastolic and systolic heart failure (DHF, SHF), BMI status, type 2 diabetes mellitus (T2DM), hypertension (HTN), hypothyroidism, chronic obstructive pulmonary disease (COPD) were identified with their respective ICD-9 codes.

Results: 114,632 patient admissions were identified with a primary diagnosis of pHTN. In pHTN patients complicated by GERD, there was an increased likelihood of diastolic HF (OR 1.25) and morbid obesity (1.57). There was no association between GERD and viral hepatitis, SHF, and/or obesity. There was an increased likelihood of GERD in patients that had HTN (1.36) and hypothyroidism (1.50). There was no observed relationship between GERD and T2DM or COPD.

Conclusion: pHTN complicated by GERD was associated with an increased incidence of DHF and morbid obesity. Though there is no clear pathophysiology linking these diseases, we theorize chronic esophageal irritation and inflammation causing cough may illicit pHTN. Adequate treatment of GERD and identification of the cause such as sphincter dysmotility and H. pylori infections may improve or delay the presence of these comorbidities. Further research needs to be done to understand this underlying pathophysiology, as well as the potential protective role T2DM and COPD may play in GERD.

Variable	P-Value	Odds Ratio (95% CI)
Viral Hepatitis		
No GERD	Reference	
GERD	.644	1.03 (0.90-1.19)
Combined Heart Failure		
No GERD	Reference	
GERD	.516	1.10 (0.83-1.44)
Systolic Heart Failure		
No GERD	Reference	
GERD	.143	.884 (.750-1.04)
Diastolic Heart Failure		
No GERD	Reference	

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GERD	.000*	1.25 (1.15-1.36)
Morbid Obesity (30 and over)		
No GERD	Reference	
GERD	.000*	1.57 (1.41-1.74)
Obesity (25-29)		
No GERD	Reference	
GERD	0.136	1.39 (0.90-2.14)
BMI (19-24)		
No GERD	Reference	
GERD	.503	1.16 (0.75-1.79)
GERD		
No Comorbidity	Reference	
Diabetes Mellitus	.001	0.94 (0.90-0.98)
Hypertension	.000*	1.36 (1.31-1.41)
Hypothyroidism	.000*	1.50 (1.43-1.58)
Chronic Obstructive Pulmonary Disease	.005	1.06 (1.01-1.10)
* significance level $p < 0.001$		