

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



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Introduction

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, heart failure (HF), BMI status, type 2 diabetes mellitus (T2DM), hypertension, hypothyroidism, chronic obstructive pulmonary disease (COPD) were identified with their respective ICD-9 codes.

Results

Table 1. Comorbidities in study population in patients with 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	
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)

*significance level p<0.001

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

Table 2. GERD in study population in patients with comorbidities

Variable	P-Value	Odds Ratio (95% CI)
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

Discussion

GERD as a complication of pHTN was seen to increase the likelihood of having diastolic heart failure and morbid obesity. Though there is no clear pathophysiology linking these diseases, chronic irritation of the esophagus leading to cough and increased inflammation may lead to worsening disease process of 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. It was also observed that hypertension and hypothyroidism increased the likelihood of having GERD, whereas T2DM and COPD did not. Further research needs to be done to understand the protective pathophysiology T2DM and COPD may have to prevent a common comorbidity such as GERD.

