



DEPARTMENT OF THE AIR FORCE
59TH MEDICAL WING (AETC)
JOINT BASE SAN ANTONIO - LACKLAND TEXAS



15 MAR 2017

MEMORANDUM FOR 959 CSPA/44M1
ATTN: CAPT MICHAEL GONZALES

FROM: 59 MDW/SGVU

SUBJECT: Professional Presentation Approval

1. Your paper, entitled **Incidence of Pulmonary Disease in Inflammatory Bowel Disease** presented at/published to **National ACP, San Diego, CA, 30 March -1 April 2017** in accordance with MDWI 41-108, has been approved and assigned local file #**17133**.
2. Pertinent biographic information (name of author(s), title, etc.) has been entered into our computer file. Please advise us (by phone or mail) that your presentation was given. At that time, we will need the date (month, day and year) along with the location of your presentation. It is important to update this information so that we can provide quality support for you, your department, and the Medical Center commander. This information is used to document the scholarly activities of our professional staff and students, which is an essential component of Wilford Hall Ambulatory Surgical Center (WHASC) internship and residency programs.
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4. Congratulations, and thank you for your efforts and time. Your contributions are vital to the medical mission. We look forward to assisting you in your future publication/presentation efforts.

Linda Steel-Goodwin

LINDA STEEL-GOODWIN, Col, USAF, BSC
Director, Clinical Investigations & Research Support

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c. Skabelund, Andrew J., MD	O-4/Major	959 CSPPS	
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Incidence of Pulmonary Disease in Inflammatory Bowel Disease

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Introduction The pulmonary manifestations of the inflammatory bowel disease (IBD) have been recognized for the last 40 years¹. Early studies revealed an incidence of pulmonary manifestations of IBD of only 0.21%². More recently, in a study of 36 IBD patients, Songur et al found that 44% of IBD patients have chronic respiratory symptoms; this was after exclusion of asthma, chronic gastroesophageal reflux, chronic bronchitis, and emphysema patients³. Multiple studies evaluated symptomatic and asymptomatic IBD patients and found abnormal pulmonary function tests (PFTs) in 28.5-58% and abnormal high resolution computed tomography (HRCT) in 22-64% of study participants³⁻⁶.

Methods: This study is a retrospective chart review of patient records in AHLTA. A preliminary search conducted by BAMC Health Care Operations (HCO) has identified approximately 1521 Crohn's disease (CD) or ulcerative colitis (UC) patients (ICD-9 codes 556.xx and 555.xx) with inpatient and outpatient encounters over the past 5 years within DoD facilities in the San Antonio Multi-Market. This was used as the study group and was cross referenced by the SAMMC HCO for the ICD-9 codes of pulmonary diagnoses (See table 1). The prevalence of the various respiratory symptoms and diseases were then determined based on the results.

Results: A total of 1521 cases of IBD were found between 2010-2015. The prevalence of the various diagnoses are presented in table 1. A total of 525 unique patients(34.5%) were found to have ICD-9 codes associated with pulmonary symptoms or disease. Cough and dyspnea were the most common respiratory diagnoses associated with this population.

Discussion: The incidence of respiratory symptoms in the IBD population is not insignificant. 34.5% of IBD patients in this population were evaluated for respiratory complaints at some point during the 5 year study period. It is difficult to assess what the burden of chronicity is for the most common complaints of cough and dyspnea without performing a more in depth review of the medical records. Additionally, there was a high incidence of pneumonia, COPD, and venous thromboembolism in this population.

There is a high incidence of pulmonary symptoms in IBD patients. There are multiple potential explanations for this. Treatment of IBD typically requires immune suppression or surgery, both of which can place a patient at risk for pulmonary infections. IBD has been known to involve the large and small airways as well, and there is an apparent increased risk of this following colectomy in UC patients.

Of note, there were no diagnoses of asthma in our patient population, which is inconsistent with previously reported data, which noted that second only to arthritis, asthma was one of the most common chronic diseases in the IBD patient population.

A thorough chart review of our population is currently underway to assess the severity of the pulmonary symptoms in these patients. We hope to answer the question regarding the burden of chronicity of the respiratory diseases in these patients, in addition to answering the question whether asthma is as common in IBD as was previously thought.

Diagnosis	Patients	ICD-9 Codes	Percentage of total population
Alpha-1-antitrypsin def.	0	273.4	0.0
Asthma	0	493.xx	0.0
Bronchiectasis	9	494.0-1	0.6
Chronic Bronchitis	25	491.xx	1.6
COPD	63	496.xx	4.1
Cough	264	786.2	17.4
Dyspnea	279	786.0	18.3
Hemoptysis	8	786.30,786.39	0.5
Interstitial Lung Disease	2	516.xx	0.1
Pneumonia	136	480-486	8.9
Pulmonary Hypertension	0	416.0,416.8	0.0
Pulmonary Nodule	0	793.11,793.19	0.0
Pulmonary Vasculitis	5	447.6, 417.8	0.3
Venous Thromboembolism	52	415.1, 453.x	3.4
Wheezing	27	786.07	1.8
Sarcoidosis	6	135	0.4
Total unique patients	525		34.5

Table 1: Results of search for ICD-9 codes

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Introduction

- The pulmonary manifestations of the inflammatory bowel disease (IBD) have been recognized for the last 40 years¹
- Early studies revealed an incidence of pulmonary manifestations of IBD of only 0.21%².
- More recently, in a study of 36 IBD patients, Songur et al found that 44% of IBD patients have chronic respiratory symptoms³
- Multiple studies evaluated symptomatic and asymptomatic IBD patients and found abnormal pulmonary function tests (PFTs) in 28.5-58% and abnormal high resolution computed tomography (HRCT) in 22-64% of study participants³⁻⁶.

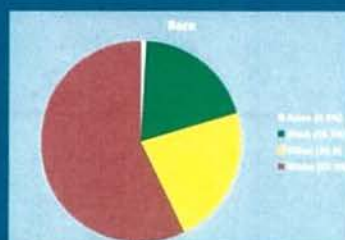
Methods

- Retrospective chart review of patient records in AHLTA (EMR). A preliminary search identified approximately 1521 Crohn's disease (CD) or ulcerative colitis (UC) patients.
- Cross referenced for the ICD-9 codes of pulmonary diagnoses
- The prevalence of the various respiratory symptoms and diseases were then determined based on the results.

Results

- Pulmonary symptoms
 - Over half evaluated for pulmonary symptoms
 - Cough and dyspnea most common
- Pulmonary medications
 - Increased SABA prescription
 - 14% using ICS
- Suggests undiagnosed disease
- Pulmonary function tests
 - Numerous abnormalities
 - Abnormal DLCO and TLC (>40%)
 - Mid-flows suggest small airway disease
- CT findings:
 - Pulmonary nodules—high prevalence
 - High prevalence of bronchiectasis and pleural disease

Age	49.4 (19-96)
Male	110 (51.2%)
Ulcerative Colitis	110 (51.2%)
Crohn's Disease	105 (48.8%)
Smoking History	51 (23.7%)



Pulmonary Symptoms	N (%)
Cough	86 (40.0)
Dyspnea	50 (23.3)
Chest Pain	27 (12.6)
Wheezing	12 (5.6)

Pulmonary Diagnosis	N (%)
Asthma	23 (10.7)
COPD	12 (5.6)
Venous Thromboembolism	9 (4.2)
Restrictive Lung Disease	15 (7.0)
Pneumonia	26 (12.1)

Radiographic Finding	N (%)
Pulmonary Nodule	28 (46.7)
Ground Glass Opacity	6 (10.0)
Bronchiectasis	10 (16.7)
Emphysema	10 (16.7)
Mediastinal/Hilar Adenopathy	7 (11.7)
Interstitial Disease/Fibrosis	4 (6.7)
Pleural effusions or thickening	8 (13.3)

Pulmonary Medication	N (%)
Short-acting beta-agonists	93 (43.3)
Inhaled corticosteroid	30 (14.0)
Long-acting beta-agonists	19 (8.8)
Long-acting muscarinic antagonists	8 (3.4)

Spirometry Values (% predicted)	Mean ± SD	Spirometry Value	% Abnormal
FVC	88.5 ± 16.7	FVC	20.4
FEV1	84.7 ± 19.7	FEV1	28.6
FEV1/FVC	75.4 ± 10.4	FEV1/FVC	4.0
FEF25-75	81.3 ± 34.0	FEF25-75	34.8
TLC (N=21)	84.1 ± 22.7	TLC	42.9
DLCO (N=25)	70.8 ± 20.9	DLCO	44.0

Conclusions

- Large, diverse retrospective chart review
- Preliminary data shows high prevalence of pulmonary disease
- High volume of PFTs and CT scans
- Future treatment of IBD patients
- Strengths
 - Large data pool for investigation of abnormal PFTs and CT findings
 - Chart review only 1/5 complete with 49 PFTs and 60 CTs analyzed
- Weaknesses
 - Misdiagnosis via ICD-9 code screening (37.7% exclusion rate)
 - Electronic searches

Next Steps

- Complete remaining chart review
- Incorporate abdominal CT findings
- Inflammatory markers
- GI medications

Resources

- Kraft SC, et al. Unexplained bronchopulmonary disease with inflammatory bowel disease. *Archives of Internal Medicine*. 1976;136(4):454-459.
- Desa SJ, et al. Diffuse parbronchiolitis preceding ulcerative colitis. *Chest*. 1989;95(6):1342-1344.
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