Increased Risk of Depression in Patients with Crohn's Disease

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Introduction

Individuals with IBD have been shown to be at an increased risk of developing depression and anxiety. Previous work has demonstrated patients with UC were more likely to report depressive symptoms preceding their diagnosis of IBD than the general population. Young patients with CD also have a greater risk for developing anxiety disorders. One study demonstrated mental conditions are often diagnosed within one year prior to UC diagnosis. This signifies that psychiatric disorders may either be a consequence of early symptoms of the undiagnosed gastrointestinal condition or may increase an individual's susceptibility to develop IBD.

Psychological disease may amplify symptom severity, particularly abdominal pain perception in adults with IBD. Previous work has demonstrated that psychological state may influence perception of abdominal pain and patients with depression were more likely to take IBD-related disability.

Research Question

In veteran patients with IBD, do patients with diagnosed depression and Crohn's disease when compared to patients with Crohn's disease without depression have more likely to have active disease?

Materials and Methods

We used a subset of Veterans charts from the national VA database with a diagnosis of IBD from 1/1/2000 until 8/14/2018. Data gathered from the VISTA database was used for the analysis. The Veteran's Health Administration institutional review board approved the study.

Patient charts were divided into two groups: CD with depression and CD without depression (control). From the CD with depression group, all patients with a diagnosis of Crohn's disease with depression were used, however, patients with a diagnosis of CD who did not receive treatment at the VA were excluded.

Patients were considered in remission if their most recent colonoscopy showed no active disease. Patients were considered to have active disease if their most recent colonoscopy demonstrated signs of inflammation.

When reported, depression severity was recorded in charts as mild, moderate or severe. From this we created a depression severity score by converting them to numerical values (mild=1, moderate=2, severe=3). Severity score is recorded as an average of these values.

Results

A total of 159 patient charts were included in this study, 122 from the Depression group and 37 from the no depression group. Colonoscopy data used to determine remission vs active Crohn's disease was available for 101 patients. Table 1 is a descriptive demographic statistic chart by IBD status, including 63 patients with active Crohn's Disease and 38 patients in remission. Of the 63 patients in active group 16 (25.4%) of patients were tobacco users, compared to 0 (0%) in the remission group (p<0.001). 1 (2.63%) of the patients in the remission group had alcohol use disorder compared to 12 (18.1%) of the active group (p<0.28). 5 (13.2%) of the remission group had substance abuse disorder compared to 24 (38.1%) of the active group (p<0.12).

Variables	Overall N=101	Remission N=38	Active N=63	p-value
Age, years (median, IQR)	64 (49, 72)	64 (55, 72)	63 (47, 71)	0.39
Sex (male, %)	92 (91.1)	33 (86.8)	59 (93.7)	0.29
CRP (median, IQR)	6.80 (3.05, 28.3)	3.8 (2.7, 16.7)	9.10 (3.30, 41.2)	0.19
Calprotectin (median, IQR)	83.5 (22.1, 347.3)	83.0 (15.6, 751.0)	84.0 (25.7, 257.2)	0.93
Alcohol (yes, %)	13 (12.9)	1 (2.63)	12 (18.1)	0.028
Tobacco (yes, %)	16 (15.8)	0 (0.00)	16 (25.4)	<0.001
Substance Abuse (yes, %)	29 (28.7)	5 (13.2)	24 (38.1)	0.012
Schizophrenia (yes, %)	3 (2.97)	3 (3.89)	0 (0.00)	0.051
PTSD (yes, %)	26 (25.7)	8 (21.1)	18 (28.6)	0.48

Table 1: Wilcoxon Rank Sum test to compare continuous variables and Chi-Squared/Fisher's Exact Test to compare categorical variables.

Variables	No Depression N=37	Depression N=122	Univariate OR (95% CI)[1]	p-values	Multivariate OR (95% CI)[2]	p-values
IBD severity (active, %)	15 (45.5)	48 (70.6)	2.88 (1.21, 6.81)	0.016	2.33 (0.92, 5.87)	0.072
Age, years (median, IQR)	70 (49, 75)	61.5 (51, 70)	0.97 (0.95, 1.00)	0.13		
Sex (male, %)	33 (89.2)	103 (84.4)	0.65 (0.21, 2.06)	0.47		
CRP (median, IQR)	27.7 (2.70, 80)	7.65 (3.30, 20.8)	0.98 (0.96, 1.00)	0.076		
Calprotectin (median, IQR)	394.8 (40.2, 739.4)	84 (25.7, 106.6)	0.99 (0.99, 1.00)	0.12		
Alcohol (yes, %)	2 (5.41)	18 (14.8)	3.03 (0.67, 13.7)	0.15		
Tobacco (yes, %)	2 (5.41)	21 (17.2)	3.63 (0.81, 16.3)	0.092		
Substance Abuse (yes, %)	4 (10.8)	39 (31.9)	3.87 (1.28, 11.7)	0.016	3.52 (1.05, 11.8)	0.041
Schizophrenia (yes, %)	1 (2.70)	4 (3.28)	1.22 (0.13, 11.3)	0.86		
PTSD (yes, %)	3 (8.11)	44 (36.1)	6.39 (1.85, 22.0)	0.003	5.20 (1.36, 19.8)	0.016

Table 2: (1) Univariate Logistic Regression with no adjustments
(2) Multivariable Logistic Regression adjusting for substance abuse and PTSD

Variables		Depression Severity Score Mean (SD)	OR (95% CI)	p-value
IBD severity	Remission	2.00 (1.0)	REF	
	Active	2.06 (0.70)	1.16 (0.19, 6.77)	0.87
Age, years	≤ 63	1.86 (0.76)	REF	
	>63	2.17 (0.64)	1.03 (0.98, 1.08)	0.24
Sex	Female	2.16 (0.75)	REF	
	Male	1.97 (0.71)	0.59 (0.12, 3.05)	0.53
CRP	<6.08	2.00 (0.87)	REF	
	>6.08	2.00 (0.57)	1.03 (0.98, 1.07)	0.22
Calprotectin	<83.5	2.00 (N/A)	REF	
	>83.5	2.00 (1.41)	1.03 (0.98, 1.10)	0.26
Alcohol	No	1.90 (0.71)	REF	
	Yes	2.30 (0.67)	2.96 (0.74, 11.9)	0.13
Tobacco	No	1.96 (0.77)	REF	
	Yes	2.14 (0.38)	1.48 (0.35, 6.14)	0.59
Substance Abuse	No	1.88 (0.77)	REF	
	Yes	2.21 (0.58)	2.37 (0.69, 8.20)	0.17
Schizophrenia	No	2.00 (0.72)	REF	
	Yes	2.00 (N/A)	1.00 (0.04, 25.9)	1.00
PTSD	No	2.08 (0.71)	REF	
	Yes	1.87 (0.72)	0.57 (0.17, 1.90)	0.36

Table 3: Multivariable Logistic Regression adjusting for substance abuse and PTSD

Conclusion

These findings provide additional evidence that depression is associated with increased Crohn's disease activity in the Veteran population. Based on this data, one may consider that treating an individual's depression may reduce the frequency and severity of Crohn's disease activity. There may be benefits to holistically treating a patient's IBD through also evaluating and monitoring his or her psychological health.

Other studies have demonstrated the likelihood that psychiatric disorders often co-exist with inflammation, infections, and autoimmune diseases. Furthermore, our data demonstrated strong associations found between substance abuse and the likelihood of depression.

Interestingly, our results indicated no association for the measured CRP and calprotectin between the Crohn's Disease with depression and the Crohn's disease without depression groups.

Limitations of this study included a smaller sample size and power. Additionally, patients who were feeling sick may have been more likely to receive colonoscopy.

Summary

- These findings provide evidence that depression is associated with increased Crohn's disease activity in the Veteran population.
- Findings indicate that there may be benefits to holistically treating a patient's IBD through also evaluating and monitoring his or her psychological health through more frequent screening tests such as the PHQ-9.

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