

Combination of High Fecal Calprotectin and High Scores of The Frequency of Night Motion and Urgency Might Discriminate Ulcerative Colitis Patients with Bad Quality of Life and Fatigue in Ulcerative Colitis Patients

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ABSTRACT

Background: Ulcerative colitis (UC) has worldwide distribution and affects an increasing number of people. Calprotectin (CP) was found to be used to discriminate high fatigue scores among UC patients.

Objective: The aim of the current study is the assessment of the relation between ulcerative colitis (UC) disease activity scores and fecal calprotectin (FCP) levels and patients' quality of life (QOL) and sensation of body fatigue.

Patients and methods: A total of 51 newly clinically diagnosed UC patients underwent evaluation of disease activity using the Simple Clinical Colitis Activity Index (SCCAI) and Mayo's Disease Activity Index (DAI) and for QOL and fatigue using the Inflammatory Bowel Disease-QOL and IBD-Fatigue Questionnaires (IBD-QOL-Q, IBD-FQ). Serum C-reactive protein (CRP) and FCP levels were estimated.

Results: About 53% of patients had 3-4 UC diagnostic criteria with median values for SCCAI score and Mayo's DAI of was 6 (IQR=3-8) and 6 (IQR=5-9), respectively. A total of 27 patients had scores on IBD-QOL-Q and IBD-FQ above the median value. A total of 28 patients had serum CRP ≥ 9 and 26 patients had FCP level ≥ 150 . Regression analysis defined high score for the night bowel (NB) motion frequency ($\beta=0.476$, $P<0.001$), rectal bleeding ($\beta=0.269$, $P<0.001$), old age ($\beta=0.165$, $P=0.014$), IBD-FQ ($\beta=0.180$, $P=0.022$) and urgency ($\beta=0.180$, $P=0.022$) as predictors for high IBD-QOL-Q score and the Receiver Operating Characteristic (ROC) curve analysis defined high score for NB motion frequency as the significant predictor for a score of 98 on IBD-QOL-Q. Combined scoring of the frequency of number of bleeding motions, stool urgency, rectal bleeding and high FCP levels could be used to discriminate patients with high fatigue scores and FCP can discriminate patients with score >60 with PPV of 85.29% (95%CI: 73.79-84.11%) and accuracy rate of 74.51% (95%CI: 60.37-85.67%).

Conclusion: IBD badly affects patients QOL and this effect is related to disease severity and severity of differential symptoms especially the NB frequency, urgency and severity of rectal bleeding.

Keywords: Ulcerative colitis, Fecal Calprotectin, Quality of life, Fatigue, Severity indices.

INTRODUCTION

Ulcerative colitis (UC) is an inflammatory bowel disease (IBD) that is characterized by diffuse mucosal inflammation of the colon and rectum ⁽¹⁾. Despite being a disease of the digestive tract system, IBD had extra-intestinal manifestations especially affecting the musculoskeletal system and skin ⁽²⁾.

UC has worldwide distribution and affects an increasing number of people ⁽³⁾. UC is characterized by significant disparity in disease severity levels ⁽¹⁾, and trends in different countries and by repeated remissions and relapses however, its treatment still has limited clinical success ⁽³⁾.

The frequent symptoms especially bloody diarrhea, stool urgency and abdominal pain in addition to the various side effects and adverse events related to treatment may disturb patients' daily life activities ⁽⁴⁾. These effects with the patients' knowledge that the disease course requires lifelong constant treatment can interfere with their daily performance and ability to work ⁽⁵⁾. Further, the repeated cycles of remission and exacerbation cause patients to fear recurrence, resulting in anxiety, depression, and even social isolation ⁽⁶⁾.

Calprotectin (CP) is a member of the S-100 protein family as a heterodimer of S100A8/S100A9 formed by two binding proteins ⁽⁷⁾. CP functions in the host innate

immune response to infection through chelating transition metals required by pathogens to grow and thrive with high affinity ⁽⁸⁾. CP also, generates a positive, pro-inflammatory feedback loop through acting as a ligand for pattern recognition receptors this signaling cascade leads to increased expression of ligand and receptor, thus creating a pro-inflammatory environment ⁽⁹⁾.

The aim of the current study is the assessment of the relation between UC disease activity scores and fecal calprotectin (FCP) levels and patients' quality of life (QOL) and sensation of body fatigue.

PATIENTS AND METHODS

Design: Prospective questionnaire-based observational study.

Setting: Department of Internal Medicine, Faculty of Medicine, Misr University for Science and Technology.

Patients: All UC patients attending the outpatient clinic as new cases or for follow-up were evaluated for exclusion and inclusion criteria.

Inclusion criteria: Newly UC patients free of exclusion criteria and attended the clinic during the study duration since June 2018 till Aug 2022, were enrolled in the study.

Exclusion criteria: The exclusion criteria included recurrent ulceration after surgical treatment to any levels, presence of malignancy elsewhere in the body, the presence of other immune-related diseases, the maintenance on immunosuppressive for any other indication, and refusal to participate in the study.

Blindness: An assistant who was blinded about the study objectives and results of colonoscopy grading and lab findings helped the patients to answer the questionnaires. The clinical pathologist was blinded about the indication for the requested lab investigations and the author was blinded about the results of the lab investigations and the questionnaire' score. At the end of case collections, the author received these data and interpreted it.

Evaluation tools:

1. **Diagnosis of UC:** patients fulfilling at least three of the following criteria were diagnosed as UC patients: 1. Presence of abdominal pain, diarrhea, hematochezia and/or pus in stools; 2. Presence of rectal with or without colonic continuous mucosal ulcerations on colonoscopic examination; 3. Absence of manifestations and colonoscopic diagnostic findings of Crohn's disease and indeterminate colitis; 4. Microscopic examination of colorectal biopsy consistent with UC ⁽⁶⁾.
2. **Simple Clinical Colitis Activity Index (SCCAI)** including 5-domains; bowel frequency during day was scored 0-3 and bowel frequency by night was scored by 1 or 2, urgency of defecation was scored 1-3, blood in stool was scored 1-3, general wellbeing was scored 0-4, and the presence of extracolonic features was scored by one/manifestation within a score-range of 0-20 ⁽¹⁰⁾.
3. **Assessment of IBD activity:** UC was considered as active if the simple clinical colitis activity index (SCCAI) is >5, FCP ≥ 150 $\mu\text{g/g}$ or serum C-reactive protein (CRP) is >5 mg/L otherwise patient was considered to be in remission ⁽¹¹⁾.
4. **Mayo's Disease Activity Index (DAI) for UC:** Mayo's DAI for UC consists of four evaluated items; Stool frequency, Rectal bleeding, colonoscopic mucosal appearance and physician rating of disease activity. Each item was graded on 0-3 scale for a total Mayo score of ≥ 11 indicates severe disease activity, 6-10 indicates moderate disease activity and score of <6 indicates mild disease activity ⁽¹²⁾.
5. **Inflammatory Bowel Disease QOL Questionnaire (IBD-QOL-Q)** which consists of 32 questions, each was graded from 1-7 for a total score of 32-224 with higher scores indicate better QOL. The thirty-two questions cover four domains evaluating bowel, systemic, emotional and social functions ⁽¹³⁾.
6. **Inflammatory Bowel Disease-Fatigue (IBD-F) patient self-assessment scale:** consists of 2

components, the 1st contains 5 questions for the estimation of the level of fatigue and the 2nd contains 30 questions to assess the negative impact of fatigue on QOL. Both components were score using 0-4 scale for a minimum of 0 and maximum of 20 and 120, respectively ⁽¹⁴⁾. For the 1st component, score of >4 indicates moderate and >6 indicates severe fatigue ⁽¹⁵⁾, and for the 2nd component score of <60 points indicated moderate and >60 indicates severe fatigue ⁽¹⁴⁾.

7. Lab investigations:

- a. FCP level: according to the manufacturer's instructions, non-steroidal anti-inflammatory drugs and proton pump inhibitors are to be stopped 1-wk and smoking is prohibited for 24-h before sample collection. Sample was collected in dry clean plastic container and sealed once collected and kept at room temperature and sent to the lab to be ELISA analyzed using ELISA kit abcam (Abcam Inc., Cambridge, USA; catalog no. ab267628) ⁽¹⁶⁾. FCP levels of <50 $\mu\text{g/g}$ indicate negative results for IBD, FCP levels >150 $\mu\text{g/g}$ indicate positive results for IBD and concentrations ≥ 50 -<150 $\mu\text{g/g}$ indicate moderate levels.
- b. Blood samples were collected for estimation of serum levels of CRP (mg/L).

Ethical consent:

An approval of the study was obtained from Misr University for Science and Technology Academic and Ethical Committee. After explaining our research objectives, written informed consent was obtained from all study participants. This study was conducted in compliance with the code of ethics of the world medical association (Declaration of Helsinki) for human subjects.

Statistical analysis

Pearson's correlation analysis was applied to evaluate correlations between disease severity scores and IBD-QOL-Q and IBD-FQ scores. Regression analysis, Stepwise method, of the correlated variate and the ROC curve analysis were performed to determine the significant predictors. Statistical analyses were performed using IBM® SPSS® Statistics (Version 23, 2017; Armonk, USA). P value ≤ 0.05 indicates significance of the result.

RESULTS

During the study duration since June 2018, 74 newly clinically diagnosed UC patients were evaluated; 9 had other immune-induced diseases, 5 had recurrence after surgical resection, 4 had malignancy and 5 patients refused to undergo diagnostic colonoscopy; these 23 patients were excluded from the study, and 51 patients were enrolled in the study. The patients' demographic data are shown in **Table 1**.

Table (1): Demographic data of patients included in our study.

Variable		Data	
Age (years)	Strata	<30	3 (5.9%)
		30-39	26 (51%)
		40-49	12 (23.5%)
		≥50	10 (19.6%)
	Mean (±SD)	40 (8.5)	
Gender	Males	20 (39.2%)	
	Females	31 (60.8%)	
Body mass index (kg/m ²)	Strata	<30	20 (39.2%)
		>30	31 (60.8%)
	Mean (±SD)	30.5 (1.8)	

Data are presented as numbers, percentages, mean, and standard deviation.

All the enrolled patients had at least three diagnostic criteria with a median number of the present criteria is 4 (IQR=3-6); 27 patients (52.9%) had 3-4 criteria, 6 (11.8%) had 5 criteria and 18 patients (35.3%) had 6-7 diagnostic criteria. According to the SCCAI disease activity scoring, the median score was 6 (IQR=3-8) with the highest frequency was for those had SCCAI score of 0-5. The median of disease severity according to Mayo's disease activity index was 6 (IQR=5-9) and only 6 patients (11.8%) had severe activity, 19 patients (37.2%) had moderate and 26 patients (51%) had mild disease activity (**Table 2**).

Table (2): Patients' disease diagnosis and severity scorings.

Variable		Data	
Patients' frequency according to number of the present UC diagnostic criteria	Number of the present UC diagnostic criteria	3	15 (29.4%)
		4	12 (23.5%)
		5	6 (11.8%)
		6	14 (27.5%)
		7	4 (7.8)
	Median (IQR)	4 (3-6)	
Simple Clinical Colitis Activity Index	Scores	0-5	24 (47.1%)
		6-10	22 (43.1%)
		11-15	5 (9.8%)
		16-20	0
	Median (IQR)	6 (3-8)	
Mayo's Disease Activity Index	Scores	Mild	26 (51%)
		Moderate	19 (37.2%)
		Severe	6 (11.8%)
	Median (IQR)	6 (5-9)	

UC: Ulcerative colitis; IQR: Interquartile range.

Evaluation of the Impact of IBD on QOL considering 119 as a cutoff point, defined 24 patients had a score <119 and 27 patients had score of >119. For fatigue scoring, at median value of 79 as a cutoff point, there were 25 patients (49%) had fatigue score >79 and 26 patients had score <79 (**Table 3**).

Table (3): Scorings for impact of UC on patients' quality of life.

Scoring system	Scores		Data
IBD questionnaire	Scores	<100	14 (27.5%)
		100-150	16 (31.4%)
		151-200	19 (37.2%)
		>200	2 (3.9%)
	Median (IQR)	119 (98-163)	
IBD fatigue scorings	1 st component	Mild fatigue (score <4)	14 (27.5%)
		Moderate fatigue (score = 4-6)	19 (37.2%)
		Severe fatigue (score >6)	18 (35.3%)
		Median (IQR)	6 (4-12)
		2 nd component	Moderate fatigue (score <60)
	Severe fatigue (score >60)		27 (52.9%)
	Median (IQR)		72 (54-80)
	Total score	Median (IQR)	79 (60-91)
		<79	26 (51%)
		>79	25 (49%)

Data are presented as number, percentage, median, interquartile range (IQR).

According to the calculated median value of serum CRP; 9 (5-15) mg/L, there were 23 patients (45.1%) had serum CRP <9 and 28 patients (54.9%) had serum CRP ≥9 mg/L. Similarly, the estimated FCP level defined 25 patients (49%) had FCP <150 and 26 patients (51%) had FCP level of ≥150 (**Table 4**).

Table (4): Laboratory findings of included patients.

Variable	Scores	No. (%)	Mean (±SD)
Serum CRP (mg/L)	≥5	14 (27.5%)	3.86±0.86
	6-10	16 (31.4%)	7.81±1.47
	11-19	17 (33.4%)	15±2.5
	≥20	4 (7.7%)	28±7
	Total	51 (100%)	10.7±2.51
FCP (µg/g)	<150	25 (49%)	91±21.81
	≥150	26 (51%)	186.2±29.2

The scorings of IBD-QOL-Q showed positive significant correlations with patients' age, the SCCAI disease severity score, and the scores of NB frequency, bleeding and stool urgency and with FCP estimated levels. Moreover, IBD-QOL-Q scorings showed positive significant correlation with IBD-FQ as total and with the scores of its both components. The scorings of the 1st component of IBD-FQ showed positive significant correlation with SCCAI score, the scores of NB frequency, bleeding and stool urgency and with FCP levels, while were negatively correlated with BMI. However, the scorings of the 2nd component of IBD-FQ showed positive significant correlation with SCCAI and the number of bleeding frequency scores and with both serum CRP and FCP levels. Total score of IBD-FQ showed positive significant correlation with the SCCAI, NB frequency, bleeding and stool urgency scores, and with serum CRP and FCP levels (Table 5).

Table (5): Pearson's correlation analysis between scores of IBD-QOL-Q and IBD-FQ and other determined data.

Variable	IBD-QOL-Q		IBD-FQ					
	R	p	1 st component		2 nd component		Total score	
			r	p	r	p	r	P
IBD-QOL-Q	-	-	0.488	<0.001	0.383	0.006	0.596	<0.001
Age	0.371	0.008	0.166	0.249	0.081	0.575	0.117	0.419
Body mass index	-0.106	0.463	-0.380	0.006	-0.186	0.195	-0.249	0.081
SCCAI	0.839	<0.001	0.561	<0.001	0.426	0.002	0.506	<0.001
Serum CRP	0.077	0.595	0.251	0.079	0.316	0.025	0.342	0.015
FCP	0.283	0.046	0.499	<0.001	0.562	<0.001	0.607	<0.001
NB frequency	0.811	<0.001	0.532	<0.001	0.479	<0.001	0.554	<0.001
Bleeding score	0.605	<0.001	0.413	0.003	0.209	0.146	0.291	0.041
Urgency score	0.615	<0.001	0.357	0.011	0.253	0.076	0.304	0.032

Data are presented as Pearson's coefficient (r); QOL-Q: Quality of life questionnaire; IBD-FQ: Inflammatory bowel disease fatigue questionnaire; SCCAI: Simple Clinical Colitis Activity Index; CRP: C-reactive protein; P-value <0.05 indicates significant correlation.

Regression analysis for correlated variate defined high frequency of night bowel motions ($\beta=0.476$, $P<0.001$), bleeding ($\beta=0.269$, $P<0.001$), old age ($\beta=0.165$, $P=0.014$), total score of IBD-F questionnaire ($\beta=0.180$, $P=0.022$) and urgency ($\beta=0.180$, $P=0.022$) as significant predictors for the impaired quality of life manifested as high IBD-QOL questionnaire. ROC curve analysis of these five variables defined high score for frequency of night bowel motions could be the only significant predictor of IBD-related bad QOL with a score of 98 on IBD-QOL-Q as shown in Table 6 and Figure 1.

Table (6): ROC curve of the variate defined as significant predictors.

Variable	AUC	SE	P-value	95%CI
Old age	0.516	0.112	0.910	0.295-0.736
High total score on IBD-FQ	0.616	0.143	0.400	0.336-0.895
High score for frequency of NB motions	0.889	0.048	0.005	0.794-0.984
High score for bleeding	0.609	0.130	0.428	0.354-0.863
High score for urgency	0.511	0.079	0.936	0.357-0.666

AUC: Area under curve; SE: Standard error; CI: Confidence interval.

Regression analysis of the demographic and lab data, scores of evaluation tools defined old age, and scores for night bowel motion, bleeding and stool urgency as the significant predictors for high score of the 1st component of IBD-FQ. High SCCAI, night bowel motion and bleeding were found to be the significant predictors for high score of the 2nd component of IBD-FQ, while high FCP estimated levels and high frequency of number of bleeding (NB) motion as the significant predictors for high total score on IBD-FQ (Table 7).

Table (7): Regression analysis the collected data and diagnostic tools as significant predictors for IBD-related fatigue as a total and for its components.

Variable	IBD-F 1 st component		IBD-F 2 nd component		IBD-F Total	
	β	P-value	β	P-value	β	P-value
Age	0.160	0.023	0.127	0.903	0.039	0.945
SCCAI score	-	-	0.372	0.003	0.187	0.420
Score for NB motion	0.570	<0.001	0.450	<0.001	0.406	<0.001
Score for bleeding	0.285	<0.001	0.203	0.023	0.026	0.837
Score for urgency	0.180	0.029	0.027	0.369	0.115	0.721
FCP	0.050	0.837	0.006	0.886	0.482	<0.001

Data are presented as β : the Regression coefficient; SCCAI: Simple Clinical Colitis Activity Index; P-value <0.05 indicates significance of the coefficient.

The ROC curve analysis defined high FCP and number of NB motions as the significant predictors for a score 4 on the 1st component of IBD-F questionnaire, high serum CRP as the significant predictor for a score of 75 on the 2nd component of the IBD-F questionnaire and only high FCP as the significant predictor for a IBD-F questionnaire total score of 96 (Table 8; Figures 2-4).

Table (8): Regression analysis the collected data and evaluation tools as significant predictors for IBD-related fatigue as a total and for its components.

Variable	IBD-F 1 st component			IBD-F 2 nd component			IBD-F Total		
	AUC	P	CI	AUC	P	CI	AUC	P	CI
Serum CRP	0.671 (0.098)	0.112	0.479- 0.862	0.145 (0.059)	0.041	0.030- 0.261	0.734 (0.078)	0.178	0.582- 0.886
FCP	0.828 (0.065)	0.002	0.701- 0.955	0.209 (0.106)	0.094	0.001- 0.418	0.099 (0.057)	0.021	0.0- 0.211
Night bowel motion	0.743 (0.076)	0.024	0.593- 0.892	0.241 (0.124)	0.136	0.000- 0.484	0.298 (0.106)	0.244	0.090- 0.505
Bleeding	0.659 (0.098)	0.140	0.466- 0.851	0.298 (0.102)	0.244	0.099- 0.497	0.195 (0.112)	0.079	0.0- 0.415
Urgency	0.587 (0.1)	0.419	0.390- 0.783	0.291 (0.108)	0.228	0.079- 0.503	0.642 (0.189)	0.414	0.271- 1.0

AUC: Area under curve; SE: Standard error; CI: Confidence interval.

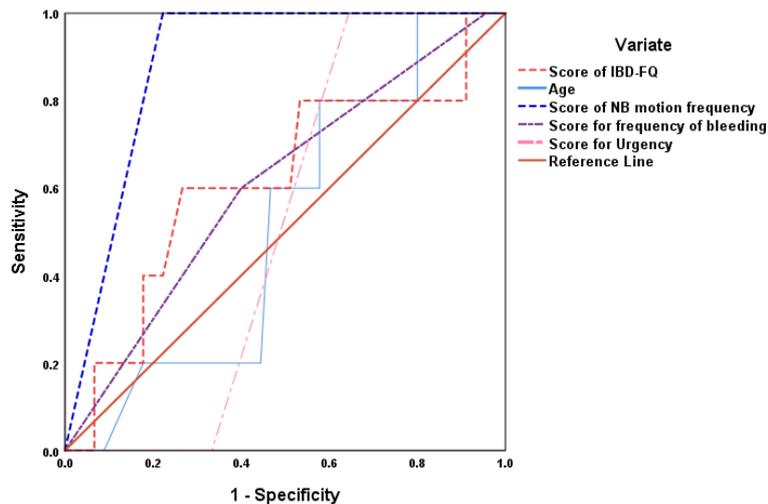


Figure (1): ROC curve analysis for the significant predictor of impact of IBD on patients' QOL as judged by the IBD-QOL-Q.

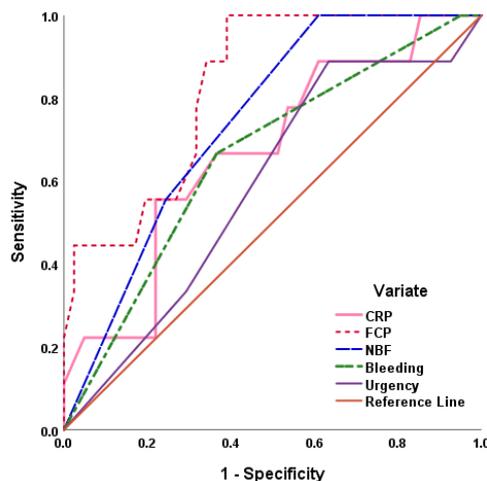


Figure (2): ROC curve analysis for the significant predictor of impact of IBD on patients' IBD-F as judged by the 1st component of IBD-FQ at cutoff of ≥ 4 .

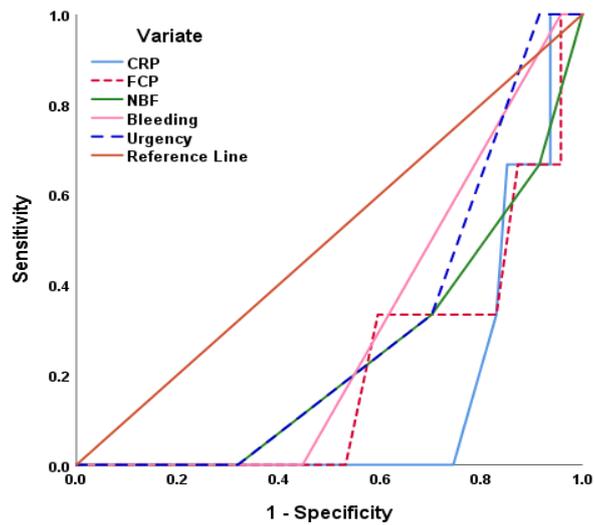


Figure (3): ROC curve analysis for the significant predictor of impact of IBD on patients' IBD-F as judged by the 2nd component of IBD-FQ at cutoff of ≥ 75 .

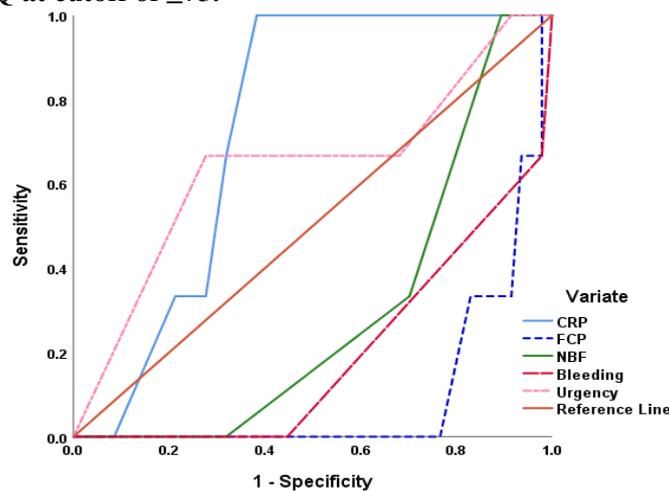


Figure (4): ROC curve analysis for the significant predictor of impact of IBD on patients' IBD-F as judged by the total score of IBD-FQ at cutoff of ≥ 96 .

The ROC curve analysis defined 100 $\mu\text{g/g}$ for FCP as the cutoff point that can discriminate patients had moderate-to-severe fatigue with a total IBD-F score ≥ 60 with AUC of 0.817 (SD 0.089) that was significant ($P=0.037$) in comparison to the area under the standard line with 95% CI: 0.638-987 (**Figure 5**). Verification of the diagnostic performance of FCP at 100 $\mu\text{g/g}$ for patients had total IBD-F score ≥ 60 showed positive predictive value of 85.29% (95%CI: 73.79-84.11%), sensitivity rate of 78.38% (95%CI: 61.79-90.17%), Specificity rate of 64.29% (95%CI: 35.14-87.11%) and accuracy rate of 74.51% (95%CI: 60.37-85.67%).

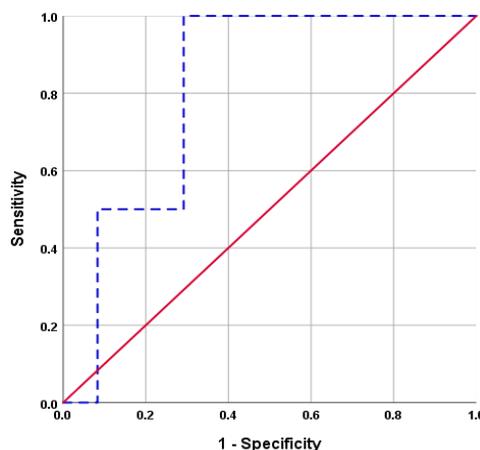


Figure (5): ROC curve analysis of the diagnostic ability of FCP at cutoff point of 100 ($\mu\text{g/g}$) for patients had IBD-F total score of ≥ 60 as a cutoff point for diagnosis of moderate-to-severe fatigue.

DISCUSSION

The present study showed the deleterious effects of UC on patients' quality of life in general as manifested by the positive significant relation between UC severity and QOL scorings. Further, UC severity scorings showed significant correlation with fatigue scorings, thus disease severity could be responsible for giving the patient the sense of fatigue that may be an additional cause of bad quality of life and hampers patients' ability to work and progress in their activities with subsequent decrease of their income that negatively feedback on their QOL. In line with these findings, **Nazarian et al.** (18) reported that fatigue, anxiety, depression, and irritable bowel syndrome symptoms are independently associated with lower QOL in IBD patients even in those had inactive. Also, **Tasson et al.** (19) reported that fatigue showed high prevalence in IBD patients and about one third of patients had fatigue had severe fatigue. Recently, **Kulyk et al.** (20) also found fatigue was the most prevalent symptom irrespective of disease activity and absence of mild fatigue had had high negative predictive value (NPV) for active inflammatory bowel disease.

In trial break the vicious circle of IBD, bad QOL and fatigue, one study suggested that aromatherapy might relieve fatigue and sleep problems with subsequent improve QOL of IBD patients when used as a complementary therapy (21). Another study found the 6-session personal dietary and physical activity advice significantly increased the diet quality, decreased the impact of the disease on daily life and reduced the sense of fatigue, but could not impose any effect on clinical disease activity, FCP, and health-related QOL (22). Also, a literature review detected a number of randomized controlled trials that suggested a possible benefit with improved outcomes especially maintenance of clinical remission and improvement in QOL, fatigue, depression, and anxiety on physical activity (23). Thereafter, a therapeutic trial using the biological therapy or tofacitinib improved work impairment in IBD patients especially UC and IBD-unclassified patients with a positive correlation between the extent of decreased total work impairment, SCCAI score and fatigue with subsequent improvement of QOL (24).

An interesting finding is the relation between fatigue scoring and sub-items of the disease activity and IBDQ scorings, where fatigue showed a positive relation with the higher frequency of bowel night motions, presence of bleeding, and higher urgency scores. These findings may be used to attribute to IBD-associated fatigue to sleep disturbance, anemia and/or fear of soiling due to urgency. These assumed causes of fatigue might induce psychological upset which in turn aggravates the sense of fatigue.

In line with these suggestions, a recent study detected a prevalence of fatigue and depression among their series of IBD patients of 50% and 23%,

respectively. A systemic review suggested sleep disturbance, anxiety, depression, and anemia as the most common risk factors for IBD-associated fatigue (25). A cross-sectional questionnaire study detected an incidence of moderate-to-severe fatigue of 49% of the study participants and was related in 21% of patients to disease chronicity, in 14% to disease activity and in 14% to nutritional deficiencies (26). Iron supplemental therapy for IBD patients was found to improve the patient-reported fatigue scores and this improvement was faster and is associated with less decrease in phosphate concentration with ferric derisomaltose (27).

Statistical analyses defined the higher frequency of night bowel motions and urgency as the most significant determinants for bad QOL and high fatigue scores. Similarly, **Kulyk et al.** (20) found urgency had high NPV and relative risk ratio across all the disease activity measures and the number of loose/liquid bowel movements can predict high FCP levels in UC patients.

The combination of the high frequency of night motions and bowel urgency with high FCP was found to discriminate patients with moderate-to-severe fatigue and ROC curve analysis defined that FCP levels at 100 µg/g can discriminate patients with fatigue score of ≥60. In line with these findings, **de Jong et al.** (28) found the combined application of the CP home test and the newly designed questionnaire, Monitor IBD At Home questionnaire, which consists of 5-items; the rectal bleeding, stool frequency, urgency, abdominal pain, and patient-reported disease activity, could predict endoscopic disease activity with sensitivity, specificity, NPV and PPV of 88.2%, 81.4%, 95.6%, and 60.0% for UC compared with endoscopy.

LIMITATIONS: The small sample size is a study limitation but was attributed to the condition that patients were newly diagnosed.

CONCLUSION

IBD badly affects patients QOL and this effect is related to disease severity and severity of differential symptoms especially the NB frequency, urgency and severity of rectal bleeding. Fatigue is a vague complaint of all IBD patients with varied severity but about 50% of patients had moderate-severe fatigue. Combined scoring of the NB frequency, stool urgency, rectal bleeding and high FCP levels could be used to discriminate patients with high fatigue scores and FCP can discriminate patients with score >60 with PPV of 85% and accuracy rate of 75%. Wider-scale study is required to establish these results.

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Conflict of interest: Nil.

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