Ultrasonographic Evaluation of Bowel Wall Thickness and Intramural Blood Flow in Ulcerative Colitis

Thesis

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List of Abbreviations

Abb.	Full term
CD	*Crohn's disease*
CDH1	*Cadherin type 1*
CRC	*Dysplasia and Colorectal Cancer*
CRP	*C-reactive protein*
CT	*Computed tomography*
DAP1	*Death Associated Protein Like 1*
ECCO	*European Crohn's and Colitis Organization*
EIM	*Extraintestinal manifestation*
GIUS	*Gastrointestinal ultrasound*
GNA12	*G protein alpha 12*
HLA	*Human leukocyte antigen*
HNF4A	*Hepatocyte nuclear factor 4 alpha*
IBD	*Inflammatory bowel disease*
IBDU	*Inflammatory bowel disease unclassified*
IL-1	*Interleukin1*
IL-10	*Interleukin 10*
IRF5	*Interferon Regulatory Factor 5*
ITGAL	*Integrin Subunit Alpha L*
IV	*Intravenous*
LAMB1	*Laminin beta 1*
MAdCAM	*Mucosal addressin cell adhesion molecule*
MDR1	*Multidrug-resistant transporter-1*
MRI	*Magnetic resonance imaging*
NF-κB	*Nuclear factor*

List of Abbreviations **cont...**

Abb.	Full term
NLRs	*NOD-like receptors*
NSAIDs	*Nonsteroidal anti-inflammatory drug*
OCPs	*Oral contraceptive pills*
PSC	*Primary sclerosing cholangitis*
SLC9A3	*Solute Carrier Family 9-member 3*
SSFA	*Short chain fatty acids*
Th2	*T helper cells*
TLRs	*Toll-like receptors*
TNFα	*Tumor necrosis factor alpha*
UC	*Ulcerative colitis*

ABSTRACT

Background: Ulcerative colitis, a type of inflammatory bowel disease that merely affects the mucosa and submucosa of colon in the form of inflammatory ulcers. **Objectives:** Our study aimed to provide an extensive overview of the main pathologic features of gut wall vessels and bowel wall thickness at US examination of UC. **Patients and Methods:** This prospective case control study was done on 40 patients confirmed to have UC attending to Outpatient Clinics of Internal Medicine and Gastroenterology Department – Ain-Shams University from October 2018 to Augost 2019.. **Results:** The peak incidence of affected patients was 30–40 years of age. Female predominance compared to male with a ratio of 2.6:1. 20% of remission patients complaining from 1-2 bowel movement while 45% and 50% of relapsing patients suffer from 3-4 and 5 bowel movement respectively. 100%, 100%, 20% and 15% of relapsing patients suffer from bleeding per rectum, abdominal pain, tenesmus and urgency. Higher ESR and CRP and lower hemoglobin in relapsing compared to remission group. Furthermore, The last group has higher value of ESR and CRP and lower value of hemoglobin compared to control group. BWT was significantly thicker in relapse group (4.8±0.7 mm) than of remission (3.55±0.5 mm) compared to control group (1.6±0.5) (p value <0.001). BWT at a cut-offs > 4 mm discriminating between cases with relapse from those with remission and at a cut-offs >4 mm discriminating between mild endoscopic severity from moderate and severe UC. Furthermore, BWT at a cut-offs >4.6 mm discriminating between mild and moderate endoscopic severity from severe UC. Vascular signal number at a cut-offs >1 discriminating between cases with relapse from those with remission and at a cut-offs >2 discriminating between mild and moderate endoscopic severity of UC.

Conclusion: Abdominal ultrasound is a widely available non-invasive method for imaging of UC. It provides a high sensitivity, specificity and accuracy in diagnosis and monitoring of UC activity.

Keywords: Ultrasonographic, Bowel Wall Thickness, Intramural Blood Flow, Ulcerative Colitis

INTRODUCTION

Ulcerative colitis (UC) is a chronic inflammatory bowel disease (IBD) characterized by alternating periods of remission and relapse ***(Orda´s et al., 2012)***.

As UC is a disease affecting the superficial layers of colonic wall, mucosal healing is, theoretically, a more achievable result of therapy compared with the transmural inflammation of Crohn's disease; thus, endoscopic response is often a target in clinical trials ***(Parente et al., 2009).***

Accurate assessment of disease extent and activity is crucial for monitoring the clinical course and treatment response in patients with UC ***(Kinoshita et al., 2019).***

Clinical symptoms alone are no longer acceptable as the sole indicator of disease activity, but should be used in combination with objective markers that assess inflammation ***(Peyrin-Biroulet et al., 2015).***

Currently, colonoscopy is regarded as the most accurate objective measure of colorectal inflammation ***(Dignass et al., 2012).***

Colonoscopy has limitations, however, such as cost, inconvenience, and invasiveness, making it unsuitable for frequent monitoring. It also has the risk of complications (e.g.,