بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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High Risk NAFLD among Patients with Irritable Bowel Syndrome: Frequency & Effect on Disease Severity

Thesis

Submitted For Partial Fulfillment of
Master Degree in **Gastroenterology**

By

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2021

سورة البقرة الآية: ٣٢

Acknowledgments

First and foremost, I feel always indebted to ***Allah*** *the Most Beneficent and Merciful.*

I wish to express my deepest thanks, gratitude and appreciation to ***Prof. Dr. Kadry Mohamed El Saied****, Professor of Gastroenterology and Hepatology, Faculty of Medicine, Ain Shams University, for his meticulous supervision, kind guidance, valuable instructions and generous help.*

Special thanks are due to ***Dr. Ahmed Samir Allam****, Assistant Professor of Gastroenterology and Hepatology, Faculty of Medicine, Ain Shams University, for his sincere efforts, fruitful encouragement.*

I am deeply thankful to ***Dr. Khaled Mohamed Raafat****, Lecturer of Gastroenterology and Hepatology, Faculty of Medicine, Ain Shams University, for his great help, outstanding support, active participation and guidance.*

I would like to express my hearty thanks to all my family for their support till this work was completed.

Hazem Mahmoud Osman Abo Zeid

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List of Abbreviations

Abb.	Full term
5-HT	Serotonin 5-hydroxytryptamine
BMI	Body mass index
C4	7α-hydroxy-4-cholesten-3-one
DJBS	Duodeno-jejunal bypass sleeve
ENS	Enteric nervous system
ESG	Endoscopic sleeve gastroplasty
FGF19	Fibroblast growth factor 19
FIB-4	Fibrosis-4 index
FODMAPs	Fermentable oligosaccharides, disaccharides, monosaccharides and polyols
GI	Gastrointestinal
HCC	Hepatocellular carcinoma
HFD	High fat diet
HMG-CoA	3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors
H-MRS	H-magnetic-resonance spectroscopy
IBS	Irritable bowel syndrome
IBS-C	Constipation predominance
IBS-D	Diarrhoea predominance
IBS-M	Mixed type
IBS-U	Undefined type
IGBs	Adjustable intragastric balloons
IL	Interleukins
MBOAT7	Hepatic phosphatidylinositol acyl chain

List of Abbreviations cont...

Abb.	Full term
MRE	Magnetic resonance elastography
MS	Metabolic syndrome
MUFAs	Monounsaturated Fatty Acid
NAFLD	Non alcoholic fatty liver disease
PDFF	Proton-density fat fraction
PI-IBS	Post infectious irritable bowel syndrome
PPAR-γ	Nuclear peroxisome proliferator–activated receptor-γ
PUFA	Polyunsaturated Fatty Acid
RYGB	Roux-en-Y gastric bypass
SH	Nonalcoholic steatohepatitis
VCTE	Vibration-controlled transient elastography
WC	Waist circumference

INTRODUCTION

Irritable bowel syndrome (IBS) is a functional gastrointestinal (GI) disease that significantly affects patient quality of life, interfere with daily activities, physical intimacy, traveling, and self-esteem ***(Ballou et al., 2019; Shah et al., 2021).***

Because of its clinical heterogeneity and the unclear etiology of IBS, robust biomarkers and therapeutic targets for IBS are difficult to identify ***(Gu et al., 2019).***

IBS is characterized by abdominal pain or discomfort, classically linked to changes in bowel habits. A high percentage (10%–15%) of the general population suffer from IBS. IBS affects more females than males ***(Milić and Stimac, 2012).***

IBS development is a key factor for GI specialist referral. Pain severity and associated psychological distress (in some cases) are key determinants for patients seeking increased medical healthcare. An IBS diagnosis is still primarily based on specific GI symptom stool characteristics and the exclusion of organic GI diseases ***(Lovell and Ford, 2012).***

Based on stool characteristics, four IBS variants have been identified: diarrhoea (IBS-D), constipation (IBS-C), mixed (IBS-M), and undefined (IBS-U). IBS pathophysiology appears to involve (to varying degrees) low-grade inflammation, abnormal motility, modifications in intestinal

barriers, alterations in gut–brain communications, psychosocial factors, increased GI fermentation and food intolerance ***(Chey et al., 2015; Akiho al., 2010).***

From an etiological perspective, evidence suggests the existence of an inflammatory component, at least in well-defined IBS cases ***(Russoet al., 2013).*** With higher concentrations of inflammatory cytokines in affected patients, e.g., interleukins (IL)-6 and IL-8, resistin and adiponectin in IBS-D patients when compared with healthy individuals ***(Lee et al., 2019).***

On the other hand, Non-alcoholic fatty liver disease (NAFLD) has become a common disease worldwide, affecting 25% of the adult population ***(Drescher et al., 2019; Leoni et al., 2018).***

It is a broad term used to cover a spectrum of conditions which are characterized by evidence of fat accumulation in the hepatocytes with or without liver inflammation (NAFLD spans a continuum of fatty liver diseases from simple hepatosteatosis (HS) also termed nonalcoholic fatty liver (NAFL) to nonalcoholic steatohepatitis (SH) also termed NASH) ***(Anstee et al., 2019).***

It has a close relation with obesity and increased body mass index (BMI), Insulin resistance (increased prevalence in diabetic patients) detected by noninvasive laboratory tests

(biomarkers) imaging or histology (macro-vesicular steatosis) in absence of secondary causes of hepatic steatosis such as significant alcohol consumption, chronic use of medications that can cause hepatic steatosis or hereditary disorders.

Non-alcoholic fatty liver disease is most often diagnosed incidentally on imaging or when it presents with complications. NAFLD is considered to be the liver manifestation of metabolic syndrome. 50 to 70% of people with diabetes are found to have NAFLD ***(Bai et al., 2017).***

NAFLD has several phases of progression, which include simple steatosis, steatohepatitis, fibrosis, cirrhosis, and ultimately could even progress to hepatocellular carcinoma. The disease has a benign course; it is a silent liver disease when the only histological finding is steatosis. The presence of hepatic injury with inflammation with or without fibrosis constitutes non-alcoholic steatohepatitis (NASH) ***(Sadik et al., 2010).***

There are no efficient studies that highlight the link between NAFLD and IBS, Obesity and fat accumulation are hypothetically implicated in IBS genesis or development Moreover, an initial correlation between IBS and NAFLD.

Inflammation and immune system activation may be the mechanisms linking two apparently different diseases, and the purpose of our review is to collect key evidence supporting

their relationship and therefore to explain the pathophysiological link between the intestine and the liver.

In this study we aim to detect if there is a prevalent relation between those two diseases and the assessment of NAFLD prevalence and severity in IBS patients.