INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: https://www.ijpsjournal.com

OPEN ACCESS

Review Article

Irritable Bowel Syndrome: History, Diagnosis, Treatment, and Medicine

Munmun Bhattacharya*, Prerna Dhiwar, Princy Tirkey, Raushani Kumari

Rungta Institute of Pharmaceutical Sciences and Research, Kokha, Kurud, Bhilai,490024, Chhattisgarh, India.

ARTICLE INFO

Published: 03 Jan. 2025
Keywords:
Irritable Bowel Syndrome (IBS), Abdominal Pain, Diarrhea, Constipation, Diagnosis, Treatment, Pharmacological Therapy, Dietary Modifications, Quality of Life, Functional Gastrointestinal Disorder.
DOI:
10.5281/zenodo.14594417

ABSTRACT

Irritable Bowel Syndrome (IBS) is a chronic functional gastrointestinal disorder characterized by abdominal pain, bloating, and altered bowel habits, including diarrhea, constipation, or both. The exact etiology of IBS remains unclear, but it is believed to result from a complex interplay of genetic, environmental, and psychological factors. This disorder significantly impacts the quality of life of affected individuals and poses a substantial healthcare burden. Diagnosis is primarily clinical, excluding other potential causes for symptoms. Treatment strategies focus on alleviating symptoms and improving quality of life through dietary modifications, pharmacological interventions, and psychological therapies. This paper provides an overview of IBS, including its history, diagnostic criteria, available treatments, and emerging medical therapies.

INTRODUCTION

IBS involves issues with digestive system function rather than structural abnormalities or disease. Despite its widespread occurrence, the exact cause of IBS remains unclear; however, it is believed to result from a combination of factors, including abnormalities in gut motility, heightened sensitivity to intestinal pain, and disturbances in the gut-brain axis. IBS is a chronic condition that significantly impacts an individual's quality of life. Symptoms can range from mild to severe, often fluctuating over time, and can be triggered by various factors, such as stress, dietary choices, infections, and hormonal changes. Emotional stress is known to exacerbate symptoms, underscoring the crucial role of the brain-gut connection in IBS manifestation.[1]

***Corresponding Author:** Munmun Bhattacharya
Address: Rungta Institute of Pharmaceutical Sciences and Research, Kohka, Bhilai,490024, Chhattisgarh, India.
Email ✉: mbhattacharya697@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

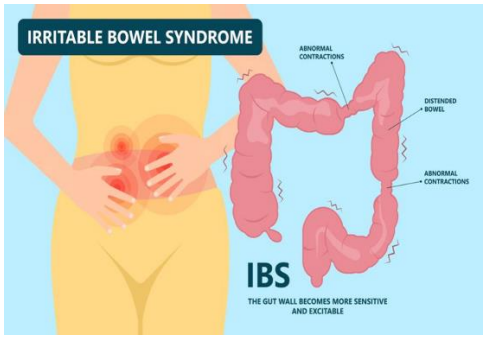

figure 1:- Irritable Bowel Syndrome (IBS)

Several IBS subtypes are categorized based on dominant symptoms: IBS-D (diarrhea-predominant), IBS-C (constipation-predominant), and IBS-M (mixed type), which involves alternating periods of diarrhea and constipation. Additionally, IBS-U (Unsubtyped) is used when symptoms do not clearly fit into one of the established categories. Diagnosing IBS typically involves ruling out other gastrointestinal conditions through medical history, symptom evaluation, and tests such as blood work or stool analysis. While there are no definitive tests for IBS, diagnosis largely depends on the Rome IV guidelines, which focus on symptom patterns over a specific period.[2] Managing IBS is multifaceted, often involving dietary changes, stress management, and medications tailored to individual symptoms. A low-FODMAP diet is commonly recommended to reduce symptoms. Probiotics, fiber supplements, and medications targeting specific symptoms may also be part of the treatment regimen Although IBS does not lead to serious health complications like cancer or permanent intestinal damage, it significantly affects daily activities, work, and social interactions. Effective IBS management requires a personalized approach, combining medical treatment with lifestyle and dietary adjustments to achieve symptom relief and improve overall well-being.

Causes

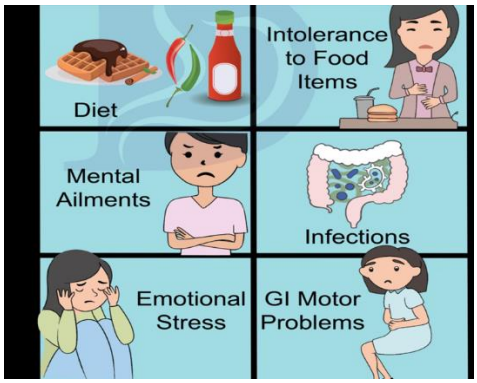

Figure 2:- Causes of Irritable Bowel Syndrome

1. **Muscle contractions in the intestine**: The walls of the intestines are lined with layers of muscle that contract as they move food through the digestive tract. Contractions that are stronger and last longer than usual can cause gas, bloating and diarrhea. Weak contractions can slow food passage and lead to hard, dry stools.
2. **Nervous system**: Issues with the nerves in the digestive system may cause discomfort when the belly area, called the abdomen, stretches from gas or stool. Poorly coordinated signals between the brain and the intestines can cause

the body to overreact to changes that typically occur in the digestive process. This can result in pain, diarrhea or constipation.

3. **Severe infection:** IBS can develop after a severe bout of diarrhea caused by bacteria or a virus. This is called gastroenteritis. IBS also might be associated with a surplus of bacteria in the intestines, known as bacterial overgrowth**.**
4. **Early-life stress:** People exposed to stressful events, especially in childhood, tend to have more symptoms of IBS.
5. **Changes in gut microbes:** Examples include changes in bacteria, fungi and viruses, which typically live in the intestines and play a key role in health. Research indicates that the microbes in people with IBS might differ from those in people who don't have IBS.[3]

Risk Factor

Many people have occasional symptoms of IBS. But you're more likely to have the syndrome if you:

1. **Are young**: IBS occurs more often in people under age 50.
2. **Are female:** In the United States, IBS is more common among women. Estrogen therapy before or after menopause also is a risk factor for IBS.
3. **Have a family history of IBS:** Genes may play a role, as may shared factors in a family's environment or a combination of genes and environment.
4. **Have anxiety, depression or other mental health issues**: A history of sexual, physical or emotional abuse also might be a risk factor.[4]

Complications

Long-lasting constipation or diarrhea can cause hemorrhoids. In addition, IBS is associated with:

1.Poor quality of life: Many people with moderate to severe IBS report poor quality of life. Research indicates that people with IBS miss three times as many days from work as do those without bowel symptoms.

2. Mood disorders: Experiencing the symptoms of IBS can lead to depression or anxiety. Depression and anxiety also can make IBS worse.[5]

Symptoms

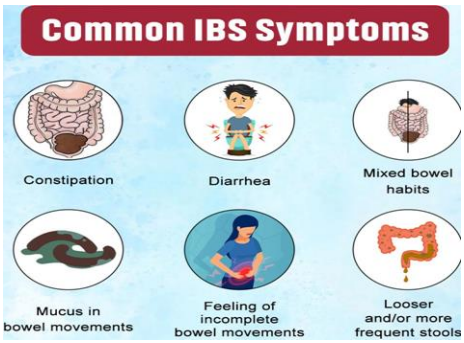

Figure 3:- symptoms of Irritable Bowel Syndrome

1. **Abdominal Pain:** Recurring abdominal pain or cramping, often in the lower abdomen.
2. **Changes in Bowel Movements:** such as diarrhea, constipation, or alternating between the two.
3. **Bloating and Gas:** which can lead to discomfort and pain.
4. **Urgency:** Feeling an urgent need to have a bowel movement.
5. **Mucus in the Stool:** Presence of mucus in the stool.
6. **Nausea and Vomiting:** especially after eating**.**
7. **Loss of Appetite:** Due to persistent symptoms.
8. **Weight Loss:** Unintended weight loss due to changes in bowel habits.

9. **Fatigue:** Feeling tired or exhausted due to persistent symptoms.
10. **Anxiety and Depression:** Anxiety and depression, which can exacerbate IBS symptoms.[6]

History of Irritable Bowel Syndrome (IBS)

The history of Irritable Bowel Syndrome (IBS) is a narrative of evolving understanding, transitioning from ancient notions of "nervous stomach" or "intestinal hysteria" to the modern, scientifically grounded classification of IBS as a functional gastrointestinal disorder.

Ancient medical texts from Greece and Rome described symptoms resembling IBS, including abdominal pain, bloating, and irregular bowel movements. Hippocrates, the "**Father of Medicine,"** noted digestive issues in his writings, but the connection between the mind and gut was largely overlooked. During the Middle Ages, digestive complaints were often attributed to imbalances in the humors, an idea originating from ancient Greek medicine.[7]

1. **In the 19th century:** scientific exploration of gastrointestinal disorders advanced, with physicians differentiating between various types of digestive disturbances. Symptoms similar to IBS were often lumped together with other disorders like colitis or dyspepsia. The term "nervous stomach" emerged in the late 1800s, describing a condition characterized by chronic abdominal pain, bloating, and irregular bowel habits without an identifiable physical cause.
2. **In the 20th century:** saw significant progress in understanding potential psychological causes of digestive issues. Gastrointestinal disorders like IBS were often labeled as psychosomatic, implying that they resulted from mental or emotional stress. Researchers believed that psychological factors contributed to symptom development, but the interaction between these factors and the digestive system remained unclear.
3. **In the 1970s:** marked a turning point in IBS understanding, as researchers began to classify it as a functional gastrointestinal disorder. The term "Irritable Bowel Syndrome" gained widespread recognition, and diagnostic criteria were developed. The Manning Criteria, introduced in 1978, was one of the first attempts to define IBS based on characteristic symptoms.
4. **The 1990s:** saw the development of the Rome Criteria, providing a standardized method for diagnosing functional gastrointestinal disorders. The Rome I criteria, published in 1992, focused on specific symptoms and their duration, offering a clearer way to identify IBS. The Rome Criteria have since been updated, with the latest version being Rome IV (2016).
5. **In the 21st century:** advances in treatment and ongoing research have improved understanding and management of IBS. Treatments now target specific symptoms, and the low-FODMAP diet has become a key dietary intervention. Research continues to explore the causes of IBS, including the role of the microbiome and the gut-brain connection.[8]

Types of Irritable Bowel Syndrome (IBS)

1. **IBS-D (Diarrhea-predominant IBS):** Diarrhea, abdominal pain, and urgency.
2. **IBS-C (Constipation-predominant IBS):** Constipation, abdominal pain, and straining during bowel movements.
3. **IBS-M (Mixed IBS):** Alternating periods of diarrhea and constipation.
4. **IBS-U (Unsubtyped IBS):** Symptoms don't fit into any of the above categories.[8]

Diagnosis (IBS)

A healthcare professional may recommend several tests to help with diagnosis. Diagnostic procedures can include:

1. **Colonoscopy:-** In colonoscopy, a camera attached to a small, flexible tube is used to examine the entire length of the colon.
2. **CT scan:-** This test produces images of the abdomen and pelvis that might rule out other causes of symptoms, especially if belly pain is present.
3. **Upper endoscopy:-** A long, flexible tube is inserted down the throat and into the esophagus, which is the tube connecting the mouth and stomach. A camera on the end of the tube provides a view of the upper digestive tract. During an endoscopy, a tissue sample called a biopsy may be collected. A sample of fluid may be collected to look for overgrowth of bacteria. This test may be recommended if celiac disease is suspected.
4. **Lactose Intolerance Tests:** Lactase, an enzyme digesting dairy product sugars, is crucial. Its deficiency can cause symptoms similar to IBS, such as abdominal pain, gas, and diarrhea. A healthcare professional may recommend a breath test or request the removal of milk and dairy products from the diet for several weeks.
5. **Breath Test for Bacterial Overgrowth:** A breath test can detect bacterial overgrowth in the small intestine. This condition is more common among individuals who have undergone bowel surgery or have diabetes or other diseases that slow digestion.
6. **Stool Tests:** Stool examinations can detect bacteria, parasites, or bile acid presence. Bile acid is a liver-produced digestive liquid. Stool studies can also assess nutrient absorption issues, known as malabsorption.[11]

Treatments

Treatment for Irritable Bowel Syndrome (IBS) focuses on alleviating symptoms to achieve a symptom-free life. Mild symptoms can often be managed by:

1. Controlling stress
2. Implementing dietary changes
3. Adopting lifestyle modifications

To manage IBS symptoms:

1. Avoid trigger foods
2. Consume high-fiber foods
3. Stay hydrated with plenty of fluids
4. Engage in regular exercise
5. Ensure adequate sleep

A healthcare professional may recommend eliminating certain foods, including:

1. **High-gas foods:** Avoid carbonated and alcoholic beverages, as well as foods that may increase gas.
2. **Gluten:** Some individuals with IBS report improved diarrhea symptoms after stopping gluten consumption, even without celiac disease. Gluten is found in wheat, barley, and rye products.
3. **FODMAPs:** Certain carbohydrates, such as fructose, fructans, lactose, and others, can exacerbate IBS symptoms. FODMAPs are present in specific grains, vegetables, fruits, and dairy products.

If problems are moderate or severe, a healthcare professional might suggest counseling especially if depression or stress tends to make symptoms worse. Based on symptoms, medicines may be recommended, including:

1. **Fiber supplements:** Taking a supplement such as psyllium husk (Metamucil) with fluids may help control constipation.
2. **Laxatives:** If fiber doesn't help constipation, nonprescription laxatives, such as magnesium hydroxide oral (Milk of Magnesia) or polyethylene glycol (Miralax), may be recommended.

3. **Antidiarrheal medicines:** Nonprescription medicines, such as loperamide (Imodium A-D), can help control diarrhea. A care professional also might prescribe a bile acid binder, such as cholestyramine (Prevalite), colestipol (Colestid) or colesevelam (Welchol). Bile acid binders can cause bloating.
4. **Anticholinergic medicines:** Medicines such as dicyclomine (Bentyl) can help relieve painful bowel spasms. They are sometimes prescribed for people who have bouts of diarrhea. These medicines are generally safe but can cause constipation, dry mouth and blurred vision.
5. **Tricyclic antidepressants:** This type of medicine can help relieve depression, but it also blocks the activity of neurons that control the intestines. This may help reduce pain. If you have diarrhea and belly pain without depression, a healthcare professional may suggest a lower than typical dose of imipramine (Tofranil), desipramine (Norpramin) or nortriptyline (Pamelor). Side effects — which might be reduced if you take the medicine at bedtime — can include drowsiness, blurred vision, dizziness and dry mouth.
6. **SSRI antidepressants:** Selective serotonin reuptake inhibitor (SSRI) antidepressants, such as fluoxetine (Prozac) or paroxetine (Paxil), may help if you are depressed and have pain and constipation.
7. **Pain medicines: Pregabalin** (Lyrica) or gabapentin (Neurontin) might ease severe pain or bloating.[11]

Medicine

Medications specifically designed for Irritable BowelSyndrome (IBS) treatment include:

1. **Alosetron (Lotronex):** Relaxes the colon, slowing waste movement through the lower bowel. Access is restricted to providers enrolled in a special program, and it's intended for severe diarrhea-predominant IBS cases in women who haven't responded to other treatments
2. **Eluxadoline (Viberzi):** Eases diarrhea by reducing intestinal muscle contractions and fluid secretion, increasing rectal muscle tone. Common side effects include nausea, abdominal pain, and mild constipation.
3. **Rifaximin (Xifaxan):** An antibiotic that decreases bacterial overgrowth and diarrhea.
4. **Lubiprostone (Amitiza):** Increases small intestine fluid secretion, aiding stool passage. Approved for women with IBS and constipation, typically prescribed for severe symptoms unresponsive to other treatments.
5. **Linaclotide (Linzess):** Enhances small intestine fluid secretion, facilitating stool passage. May cause diarrhea, but taking the medication 30-60 minutes before eating can help alleviate this side effect.[12]

DISCUSSION

The pathophysiology of IBS remains complex and multifactorial, involving gut motility disturbances, visceral hypersensitivity, gut microbiota alterations, and psychosocial factors. Despite its prevalence, IBS remains underdiagnosed and undertreated, in part due to the lack of specific biomarkers and the reliance on symptom-based diagnosis. Advances in personalized medicine, including the role of the microbiome and targeted therapies, hold promise for improving treatment outcomes. Additionally, the integration of multidisciplinary approaches—such as diet, pharmacological therapy, and psychological support—has the potential to enhance patient quality of life.

CONCLUSION

Irritable Bowel Syndrome is a prevalent yet often misunderstood condition with a multifactorial etiology. Although there is no definitive cure, various treatments, including dietary changes,

pharmacological agents, and psychological therapies, can significantly alleviate symptoms and improve patient well-being. As our understanding of IBS evolves, continued research into its pathophysiology, along with innovative treatment strategies, offers hope for more effective management of this challenging disorder.

REFERENCES

1. Robin SG, Keller C, Zwiener R, et al. Prevalence of pediatric functional gastrointestinal disorders utilizing the Rome IV criteria. The Journal of Pediatrics. 2018;195:134–139.
2. Hadjivasilis A, et al. New insights into irritable bowel syndrome: From pathophysiology to treatment. Annals of Gastroenterology. 2019; doi:10.20524/aog.2019.0428.
3. Irritable bowel syndrome. National Institute of Diabetes and Digestive and Kidney Diseases.. Accessed July 23, 2024.
4. Kellerman RD, et al. Irritable bowel syndrome. In: Conn's Current Therapy 2024. Elsevier; 2024. Accessed July 23, 2024.
5. Feldman M, et al., eds. Irritable bowel syndrome. In: Sleisenger and Fordtran's Gastrointestinal and Liver Disease: Pathophysiology, Diagnosis, Management. 11th ed. Elsevier; 2021.. Accessed July 23, 2024.
6. Irritable bowel syndrome. American College of Gastroenterology. Accessed July 23, 2024.
7. 7 tips: Irritable bowel syndrome and complementary health approaches. National Center for Complementary and Integrative Health.. Accessed July 23, 2024.
8. Irritable bowel syndrome. Canadian Society of Intestinal Research. Accessed July 23, 2024.
9. Chey WD, Kurlander J, Eswaran S. Irritable bowel syndrome: a clinical review. Journal of the American Medical Association. 2015;313(9):949–958.
10. Lacy BE, Mearin F, Chang L, et al. Bowel disorders. Gastroenterology. 2016;150(6):1393–1407.
11. U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2015–2020. 9th Ed. Published December 2020. Accessed July 15, 2021.
12. Llica G, Manno G. Otilonium bromide-diazepam in the treatment of the Irritable colon. A controlled study versus otilonium bromide. Clin Ther 1992;141:129–34.
13. Passaretti S, Guslandi M, Imbimbo BP, et al. EVects of cimetropium Bromide on gastrointestinal transit time in patients with irritable bowel Syndrome. Aliment Pharmacol Ther 1989;3:267–76.
14. Schafer E, Ewe K. The treatment of irritable colon. EYcacy and tolerance of Buscopan plus, buscopan, paracetamol and placebo in ambulatory patients With irritable bowel colon. Fortschr Med 1990;108:488–92.
15. Shaw G, Srivastava ED, Sadlier M, et al. Stress management for irritable Bowel syndrome: a controlled trial. Digestion 1991;50:36–42.Van Outryve M, Mayeur S, Meeus MA, et al. A double-blind crossove Comparison study of the safety and eYcacy of mebeverine and mebeverine Sustained release in the treatment of irritable bowel syndrome. J Clin Pharm Ther 1995;20:277–82.
16. Chapman ND, Grillage MG, Mazumder R,et al. A comparison of mebever-Ine with high-fibre dietary advice and mebeverine plus ispaghula in the Treatment of irritable bowel syndrome: an open prospectively randomised Parallel group study. Br J Clin Pract 1990;44:461–6.
17. Misra SP, Thorat VK, Sachdev GK, et al. Long-term treatment of irritable Bowel

syndrome: results of a randomised controlled trial. Q J Med 1989;73:931–9.

18. Nayak AK, Karnad DR, Abrahaam P, et al. Metronidazole relieves Symptoms in irritable bowel syndrome: the confusion with so-called chronic amebiasis'. Ind J Gastroenterol 1997;16:137–9.
19. Villagrasa M, Boix J, Humbert P, et al. Aleatory clinical study comparing Otilonium bromide with a fibre-rich diet in the treatment of irritable bowel Syndrome. Ital J Gastroenterol 1991;23:67–70.
20. Alevizos B, Christodoulou GN, Loannidis C, et al. The eYcacy of aminept-Ine in the treatment of depressive patients with irritable bowel syndrome.Clin Neuropharmacol Supplement 1989;2:S66–76.
21. Barbier JP, Dorf G, Gordin J, et al. EVect of a buzepide metiodide-Haloperidol combination in treating functional intestinal disorders. Randomised double-blind controlled versus placebo study. Ann Gastroen Terol Hepatol Paris 1989;3:123–8.
22. Greenbaum DS, Mayle JS, Vanegeren LE, et al. EVects of desipramine on Irritable bowel syndrome compared with atropine and placebo. Dig Dis Sci1987;32:257–66.
23. Tanum L, Malt UF. A new pharmacological treatment of functional gastro-Intestinal disorder. A double-blind placebo-controlled with mianserin. Scand J Gastroenterol 1996;31:318–25.
24. Goldberg PA, Kamm MA, Setti CP, et al. Modification of visceral sensitivity And pain in irritable bowel syndrome by 5-HT3 antagonism (ondansetron).Digestion 1996;57:478–93.
25. Maxton DG, Morris J, Whorwell PJ. Selective 5-hydroxytryptamine Antagonism: a role in irritable bowel syndrome and functional dyspepsia? Aliment Pharmacol Ther 1996;10:595–9.
26. Steadman CJ, Talley NJ, Phillips SF, et al. Selective 5-hydroxytryptamine Type 3 receptor antagonism with ondansetron as treatment for diarrhoea-Predominant irritable bowel syndrome: a pilot study. Mayo Clin Proc 1992;67:732–8.
27. Farup PG, Hovdenak N, Wettterhus S, et al. The symptomatic eVect of cis-Apride in patients with irritable bowel syndrome and constipation. Scand J Gastroenterol 1998;33:128–31.
28. Schutze K, Brandstatter G, Dragoisics B, et al. Double-blind study of theeVect of cisapride on constipation and abdominal discomfort as Components of the irritable bowel syndrome. Aliment Pharmacol Ther 1997; 11:387–94.
29. Van Outryve M, Milo R, Touissaint J, et al. 'Prokinetic' treatment of Constipation-predominant irritable bowel syndrome: A placebo-controlled Study of cisapride. J Clin Gastroenterol 1991;13:49–57.
30. Efskind PS, Bernklev T, Vent MH. A double-blind placebo-controlled trial With loperamide in irritable bowel syndrome. Scand J Gastroenterol 1996;31:463–8.
31. Halpern GM, Prindiville T, Blankenburg M, et al. Treatment of irritabl Bowel syndrome with Lacteol Fort: a randomised, double-blind, cross-over Trial. Am J Gastroenterol 1996;91:1579–85.
32. Hovdenak N. Loperamide treatment of the irritable bowel syndrome. Scand j Gastroenterol Suppl 1987;130:81–4.
33. Lavo B, Stenstam M, Nielsen AL. Loperamide in treatment of irritabl Bowel syndrome: a double-blind placebo controlled study. Scand J Gastro-Enterol Suppl 1987;130:77–80.
34. Lunardi C, Bambara LM, Biasi D,et al. Double-blind cross-over trial of oral Sodium cromoglycate in patients with irritable bowel syndrome due to food

35. Intolerance. Clin Exp Allergy 1991;21:569–72.

HOW TO CITE: Munmun Bhattacharya*, Prerna Dhiwar, Princy Tirkey, Raushani Kumari, Irritable Bowel Syndrome: History, Diagnosis, Treatment, and Medicine, Int. J. of Pharm. Sci., 2025, Vol 3, Issue 01, 236-244. https://doi.org/10.5281/zenodo.14594417