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Review Article **Pharmacy**

Inflammatory Bowel Disease and Oral Health: A Review of Dental Consideration

Bader Fatani[1*], Afraa Al-Safadi[2]

[1]College of Dentistry, King Saud University, Riyadh, Saudi Arabia
[2]Department of Pharmacy, King Khaled University Hospital, King Saud University Medical City, Riyadh, Saudi Arabia

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***Corresponding author:** Bader Fatani
College of Dentistry, King Saud University, Riyadh, Saudi Arabia

Abstract

Inflammatory bowel disease (IBD) is a major problem worldwide that can be categorized into two main disorders, Crohn's Disease (CD) and Ulcerative Colitis (UC). IBD development is related to a multifactorial combination including environmental factors, intestinal microflora, pathological immune responses, and genetic influences [1, 2, 6] IBD can affect the complete GI tract, starting from the mouth to the anus [3]. Dental considerations regarding IBD oral manifestations and complications must be acknowledged by dentists to reduce morbidity, and mortality, and improve overall patient lifestyle. In this review, we will provide an overview of dental considerations and oral manifestations related to Inflammatory bowel disease.

Keywords: IBD, Oral health, Oral manifestations, Dental considerations, Management.

INTRODUCTION

Inflammatory bowel disease (IBD), or as called Ulcerative colitis and Crohn's disease, are described by phases of relapse and remission. Differential diagnosis may involve a wide range of infectious or inflammatory diseases that imitate IBD, aside from others that could complicate current IBD [10]. IBD is a chronic inflammatory disease affecting the GI tract. IBD is a lifetime illness arising early in life affecting both genders. The Incidence and frequency of this disease significantly increased in the 20th century. At the start of the 21st century, IBD has been described as one of the most widespread GI diseases with fast-tracking occurrence in developed countries [11]. Dental manifestations of IBD involve periodontal disease and dental caries. Caries is produced because of alterations in the biofilm, therefore causing disruptions in the oral cavity, which cause demineralization of the tooth surface. Additional factors, including systemic diseases and medications, which could affect saliva production are similarly significant in caries development. Moreover, periodontal diseases develop due to dysbiosis, frequently with an impaired host response patient [6].

Signs and Symptoms

IBD is associated with various symptoms, such as abdominal pain, fistulas, anorexia, fever, lethargy, diarrhea, weight loss, anemia, vomiting, and rectal bleeding [1, 3]. IBD can also appear with extraintestinal symptoms in any organ system and can alter the functional state and quality of life of the patient [2]. Extraintestinal complications often appear due to drugs side effects, malnutrition, or chronic inflammation [2].

Main Investigations

A combination of clinical images, endoscopy, laboratory, and pathology can help in the identification of IBD.

Colonoscopy

Present of touch friability, frank hemorrhage, exudates, and petechiae. In addition, for loss of the vascular markings. In ulcerative colitis, colonic involvement is considered continuous, However, in Crohn's disease, a patchy nature would be seen.

Pathology

Crypt abscesses and chronic alterations such as loss of mucin in goblet cells, atrophy of glands, and branching of crypts may be seen.

Imaging studies

MRI or MR enterography, small bowel follow through (SBFT), and computed tomography: CTS or CT enterography are Imaging studies used in IBD investigations.

Serologic markers and Antibody tests

Inflammatory markers such as ERS, and CRP. Stool markers such as fecal calprotectin test, Antineutrophil cytoplasmic antibodies (pANCA), and Anti-Saccharomyces cerevisiae antibodies (ASCA).

	Crohn' disease	Ulcerative colitis
Common site	Terminal ileum	Rectum
Distribution	Mouth to anus	Rectum
Spread	Discontinuous	Continuous
Gross feature	Focal aphthous ulcer with intervening normal mucosa, linear fissures, cobblestone appearance, thickened bowel wall, creeping fat.	Extensive ulceration pseudopolyps.
Microscopy	Non-caseating granulomas	Crypt abscesses
Inflammation	Transmural	Limited to mucosa and sub-mucosa
Complications	Strictures, string sign on barium studies, abscesses, sinus tract, obstruction, fistulas	Toxic megacolon
Extraintestinal manifestations	Uncommon	Arthritis, spondylitis, primary sclerosing cholangitis, erythema nodosum, pyoderma gangrenosum
Cancer risk	1-3%	5-25%

Fig-1: A summary of relative differences between Crohn's disease and Ulcerative colitis [9].

Principles of Management

The therapeutic course varies between CD and UC. Remission in both CD and UC can be done using steroid medications which play an important role in therapy [5]. 5 ASAs: deliver a topical relief inside the intestines by working as an anti-inflammatory medication. These medications can lower the synthesis of inflammatory cytokines [5]. Purine analogues: include Azathioprine and 6 mercaptopurine, they are commonly used immunosuppressants that reduce the immune response. These medications may cause acute leucopenia which can impair the immune system [5]. Biologic anti-TNF agents: Adalimumab and Infliximab are new antibody-based drugs against TNF, it is a cytokine agent in the immune response which is regulated in inflammatory surroundings [5].

Dental Considerations

. LymphadenopathyOral manifestations are common in IBD patients which include specific and non-specific oral lesions of CD. However, in UC patients, only non-specific lesions are reported [2]. CD oral manifestations can appear before, at the same time, or occur after the intestinal manifestations [2]. CD oral manifestations include mucosal tags, aphthae, cobblestoned oral mucosa, buccal mucosal swelling, and deep liner ulcerations. However, pyostomatitis vegetans is associated with UC [3]. Many studies demonstrated that the development of disease in IBD and periodontitis is characterized by tissue damage and immunoinflammatory routes, pyostomatitis, soft tissue lesions, aphthous ulcers, and cobble stoning are oral manifestations and have been reported in association with IBD. Previous studies suggested that the development and progression of periodontitis are higher among IBD patients compared to people without IBD [4]. The occurrence of oral manifestations is more common in males compared to females, and more common in children compared to adults. The incidence of upper GI tract manifestations is higher in children with CD, which may explain the greater dominance of oral manifestations in children with CD. Oral manifestations are commonly more predominant in CD compared to UC, However, some articles stated that there are no significant difference was observed. Additionally, in adult patients with CD, the occurrence of oral lesions is greater in those with perianal disease and upper GI tract manifestations. Oral lesions can arise alongside intestinal indicators or before the exhibition of IBD. In 60% of patients, oral manifestations could be the initial sign, prior to GI involvement. While oral manifestations might be severe during the activity period, the association is not always universal, equal to 30% of patients remain with active oral lesions, especially in children [12].

Table-1: Orofacial manifestations related to inflammatory bowel disease [13].

Mucocutaneous manifestations	**Specific:** Oral granulomatosis Cobblestoning of oral mucosa Cobblestoning of oral mucosa Mucosal tags Deep linear ulcers Pyostomatitis vegetans

	Non-specific: Persistent aphthous ulcerations Glossitis Cheilitis Lichenoid reaction Candidiasis Perioral edema Perioral dermatitis Stomatitis Gingivitis Mucosal discoloration Burning mouth syndrome
Caries	Increased caries prevalence Increased amount of dental plaque Increased number of cariogenic bacteria (S. mutans, Lactobacilli)
Periodontal disease	Increased prevalence of moderate severity periodontitis Aggressive parodontogenic bacteria in dental pockets Gingivitis
Saliva and salivary glands	Fibrosis of minor salivary glands Increased number of bacteria in saliva Dry mouth
Arthritis of temporo-mandibular joint	
Odynophagia and dysphagia	
Halitosis	
Persistent lymphadenopathy	

CONCLUSION

Dentist should be familiar with oral manifestation and complications associated with IBD. Increased risk of periodontal diseases and dental caries is the most predominant forms of oral signs [7]. Thus, oral examination must be conducted to ensure early diagnosis and suitable treatment [3]. Oral lesions frequently precede the intestinal symptoms. Thus, the dentist should suspect IBD if oral lesions are present. The significant effect of IBD in oral cavity indicates the necessity for regular dental visits and periodontal assessment. Likewise, teamwork among dentists and GI physicians is important, as treatment plan for IBD patients should be changed depending on activity of the disease and medication used [13].

Summary of Important dental considerations

Regarding 5 ASAs, three things should be acknowledged by the dentists. Firstly, the risk of drug-induced agranulocytosis. Secondly, 5 ASAs may be associated with parotitis which is an enlargement in the parotid gland-like mumps. Thirdly, taste disturbances were also reported by patients [5].

Regarding Purine analogues, there were reported cases of an increase in the risk of lymphoma with Purine analogues which can present as an oral manifestation in the oral cavity [5].

Methotrexate is usually associated with ulcerative stomatitis. In addition, the current reported cases of Epstein-Barr associated lympho-proliferative conditions appearing in the gingiva, which can further cause gingival ulceration [5].

The treatment of oral lesions in IBD patients depends on recognizing the cause of the lesions. These may resolve by treating the intestinal manifestation. Corticosteroids can be used locally to the lesion and Tacrolimus can be effective in oral lesions of CD. Steroid mouthwashes are also used for symptomatic relief [5].

The Previous study showed a greater risk of incidence of dental caries in IBD patients, either CD or UC [8].

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