Differentiating Between Lactose Intolerance, Celiac Disease, and Irritable Bowel Syndrome-Diarrhea

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ABSTRACT

The purpose of this article is to assist nurse practitioners (NPs) and other primary care providers in differentiating between lactose intolerance, celiac disease, and diarrhea-predominant irritable bowel syndrome in adults. Based on subtle characteristics gathered from the history and physical examination, the NP's examination and approach to testing will help distinguish between the 3 conditions. NPs should use a sequential process of examination and testing to distinguish gastrointestinal disorders that share common symptoms. A best practice algorithm is provided.

Keywords: abdominal pain, celiac disease, diagnosis, irritable bowel syndrome, lactose intolerance

INTRODUCTION

Gastrointestinal (GI) disorders are frequently seen in primary care settings and commonly include lactose intolerance (LI), celiac disease (CD), and irritable bowel syndrome (IBS). However, these disorders are often difficult to differentiate because each condition shares common symptoms, which can contribute to delay in diagnosis. In fact, it takes approximately 1 year for patients with CD to be diagnosed after GI symptoms appear.[1] Likewise, 10%-15% of the population in the United States is affected by IBS, but only 5%-7% are actually diagnosed,[2] and usually only after their primary care provider has referred them to a gastroenterologist.[3]

Abdominal complaints are commonly seen in the primary care setting; therefore, nurse practitioners (NPs) must be well versed in GI-related disorders and utilize evidence-based information to work through various differential diagnoses. Although LI, CD, and IBS may present with similar symptoms, the pathology differs. Unlike primary LI and IBS-D, which mainly cause symptoms without mucosal inflammation, if CD is not properly diagnosed, GI mucosal inflammation will continue, which may result in poor growth, nutritional deficiencies, and other further complications. According to Pironti et al,[4] among patients complaining of chronic diarrhea and/or abdominal pain, 81% have microscopic histologic damage due to an underlying pathologic process. Therefore, it is imperative that NPs use the most current information to make accurate and timely diagnoses to prevent pathologic disease processes from ensuing and to improve the patient's quality of life.[5,6] Accordingly, the purpose of this article is to introduce NPs to a systematic evidence-based approach for successfully differentiating LI, CD, and IBS in adults.

BACKGROUND INFORMATION ON LI, CD, AND IBS

Lactose Intolerance

LI is the most common metabolic food sensitivity, affecting 60%-70% of people worldwide.[7,8] Inadequate levels of the lactase enzyme result in abdominal discomfort, bloating, gas, and diarrhea, because undigested lactose in the colon is fermented by bacteria.[7,9] Primary lactose deficiency is the most common cause of LI and is found most frequently in South America, Africa, Asia, and descendants from

those areas. Secondary lactose deficiency results from injury and inflammation of the brush border of the small intestine, such as can be found in Crohn's disease, and can also be caused by bacterial overgrowth, gastroenteritis, CD, and disorders that cause rapid GI motility.[7,10]

LI usually begins in childhood, but it is most prevalent in adulthood, because the lactase enzyme progressively decreases over the lifespan.[8,9,11] About two thirds of people in the world do not carry the genetic makeup that allows for lactase production, and are therefore either lactase persistent or nonpersistent.[12]

Celiac Disease

CD is a genetically or autoimmune-based chronic enteropathy of the small intestine that is caused by an intolerance to gluten.[5] Gluten is a complex of water-soluble protein that is a component in wheat, barley, bulgur, durum, rye, and spelt.[5] People who have the genetic predisposition for CD typically carry the human leukocyte antigen (HLA)-DQ2 or HLA-DQ8 genes (90% and 10%, respectively).[5,6] Patients with genetic-based and autoimmune diseases (especially Turner's syndrome, Down's syndrome, type I diabetes mellitus, and thyroid disease), as well as first-degree relatives of patients with CD, are considered to be high risk for developing CD.[5,6] An autoimmune process proceeds when class II HLAs produce autoantibodies against the enzyme tissue transglutaminase (tTG) in the presence of gluten, damaging the small intestine and altering the environment in which nutrients are absorbed.[5] Although many patients can be managed simply by excluding gluten from the diet, a few patients may require more aggressive treatment with immunomodulatory medications.[3]

CD involves a variety of symptoms with both GI and systemic manifestations, usually lasting longer than 3 months. A patient typically presents with diarrhea, unexplained weight loss, abdominal distention, bloating, dyspepsia, and flatulence.[5] It is not uncommon for pain to be specifically located in the right lower abdomen, and even accompanied by a palpable mass, raising suspicions of appendicitis or Crohn's disease.[13] Systemic manifestations of CD include migraines, chronic fatigue, depression, irritability, Duhring's dermatitis herpetiformis, oral aphthous ulcers, loss of dental enamel, iron-deficiency anemia, anorexia, osteoporosis, joint pain, growth failure, short stature, delayed puberty, amenorrhea, early menopause, reduced fertility, and epilepsy.[6,9,14] In addition to systemic manifestations, patients with CD also have a 3-fold increased risk of non-Hodgkin's lymphoma.[6]

Irritable Bowel Syndrome

IBS affects 10%-15% of the world's population and is a set of GI symptoms resulting from irregular relaxation and contraction of the bowel.[2] The idea that there may be a connection between excessive microflora in the gut, as well as excessive inflammation and cytokine activity, is supported by evidence.[15] Basic risk factors for IBS include female gender; being between 20 and 40 years old; and having psychosocial issues, such as anxiety, depression, personality disorders, and abuse.[16] There are 4 subtypes of IBS, but IBS with diarrhea (IBS-D) is most often confused with CD and LI. Patients with IBS-D typically report diarrhea and abdominal cramping that mainly occurs in the mornings and after meals. Other complaints include mucus in the stool, fecal incontinence, feelings of incomplete evacuation, and pain relieved by defecation.[10,15] IBS-D does not cause permanent damage to the colon or increase the risk for colorectal cancer, although it does severely impact a patient's quality of life. There is a possibility that CD and IBS-D can coexist, but there are conflicting results supporting routine screening of these concurrently.[3,17]

CURRENT RECOMMENDATIONS FOR DIAGNOSING LI

According to the most current information, it is sufficient to diagnose a patient with LI if GI complaints resolve with a lactose-free diet for at least 2 weeks. However, if symptoms persist or if the patient is unsuccessful or refuses to adhere to a trial of lactose elimination, he or she should undergo the lactose hydrogen breath test (sensitivity [69%-100%] and specificity [89%-100%]), which is noninvasive and cost-effective. During the test, individuals are given 2 g/kg of lactose and tested for hydrogen in their breath at a fasting baseline and in 30-minute intervals for 3 hours.[8,10] False-positive results occur