Malabsorption Syndromes and Capsule Endoscopy

Introduction

Malabsorption syndromes are featured by failures in hydrolysis or in the absorption of nutrients beginning in the intestines until they join the bloodstream or the lymphatic stream.

Disorders related to food absorption can be classified into primary and secondary disorders, if those processes in which we come across with hepatobiliary or pancreas failures are excluded *(Figure 1)*.

This chapter deals with recurrent malabsorption syndromes, and mainly with the celiac disease, and the role that capsule endoscopy could play in the diagnosis of its algorithm.

Celiac Disease (CD)

CD is a chronic disease of great prevalence located in the small intestine. It is believed that 1 out of 200 persons described suffer from it in our environment (1). It is caused by a permanent intolerance of gluten, a protein part of cereals (wheat, rye, barley) common in western diets. Its consumption involves the activation of an immune response developed by the CD4+ lymphocytes located in the layer of the intestines (2).

From a medical point of view, those patients suffering from CD do not represent a homogeneous group. On the other hand, there is a variety of forms or pathologies. Nowadays, the great majority of experts agree in distinguishing three main groups *(3)*: a) common CD: digestive symptoms; b) atypical CD: extra-intestinal symptoms; c) silent CD: absence of symptoms despite the presence of the characteristical intestinal injuries.

Until recently, diagnoses for CD were based on the criteria established by the *ESPGHAN* (European Society for Pediatric Gastroenterology and Nutrition) in 1970, being their basis the demonstration of the causal relationship between the consumption of gluten and the enteropathy, being then necessary to carry out three biopsies of the intestines. Nowadays, the basis for CD diagnoses are centered on the determination of serologic markers (antigliadin antibodies, antiendomysium antibodies, antitransglutaminase antibodies) and on high digestive endoscopies with intestine biopsy, although capsule endoscopy has turned out to be a new tool for the diagnosis of patients suffering from CD, and offers new perspectives in the study of this kind of patients.

Esophagogastroduodenoscopy allows the observation of particular signs which help in the diagnosis of the CD, particularly in those cases which show the presence of villous atrophy (*nodular mucosa, scalloping of folds, mosaic pattern and reduction in number of folds*) *(Figure 2)*, or less important atrophies such as multiple and superficial erosions of the second part of the duodenum (with a normal bulb and stomach) or the appearance of micronodular bulbs (4).

The endoscopic markers sensitivity to discover histological injuries has varied in the last few years, and although in the first works published, these were considered very helpful in the diagnose of CD (with sensitivity close to or even over 90%) (4), the last articles published show that sensitivity values are far from those showed before (5). So, nowadays endoscopic markers are no longer considered useful for CD diagnose if a subsequent biopsy is not carried out.

Recent works have tried to relate the presence of certain endoscopic evidence with histological injuries, as well as with the patients age and its clinical appearance. In this way (6), it concluded that the endoscopic appearance of the duodenum could be used to predict the degree of histological injuries. However, the number of these works is still small in order to be able to establish any conclusion applicable to patients suffering from CD.

The development of CE has become a new and useful tool for the treatment of patients suffering from CD, as it has two major advantages: a) It allows a detailed view of the endoscopic markers in patients suffering from CD, and, b) It offers an approximate estimate of how extent is the part of the small intestine injured.

The first works published taking into consideration the role of CE in CD were centered in the identification of villous atrophy, comparing it with the duodenal histology. It was (7) demonstrated that CE was a useful tool to diagnose those patients suffering from CD, being essential studies carried out by experts in the use of capsule endoscopy.

Some authors think that CE could be useful in the study of patients suffering from CD despite being on a gluten-free diet. In this way, (8) it concluded that the CE had a high capacity to diagnose those patients suffering from CD worsen by the identification of mucosal abnormalities and the exclusion of adenocarcinoma.

Other writers have also demonstrated certain complications in patients suffering from CD despite being on a gluten-free diet. In this way, (9) they noticed the presence of intussusception

FIGURES

Figure 1: Classification of the main diseases that can produce intestinal malabsorption.

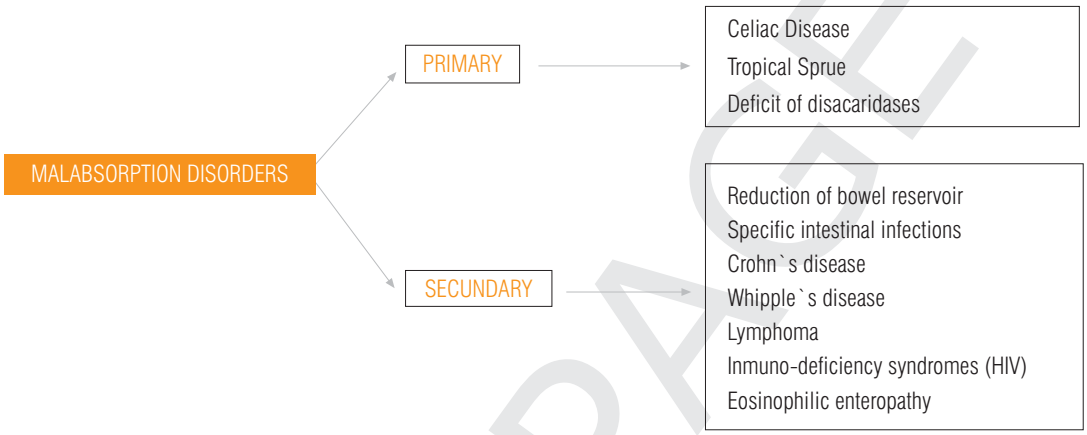

Figure 2: Endoscopic signs of villous atrophy (nodular mucosa and scalloping of folds).

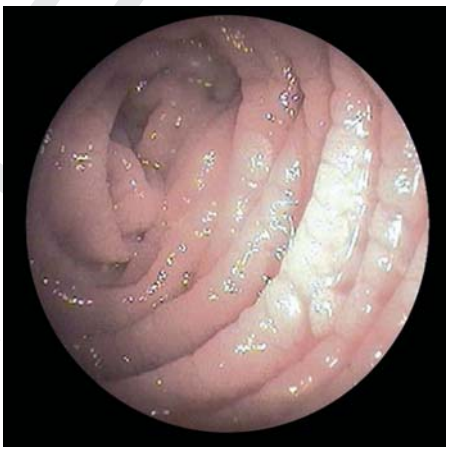

Figure 3: Current indications of Capsule Endoscopy in Celiac Disease (proposed in the 5th International Conference on Capsule Endoscopy, Paris 2006).

INDICATIONS OF CAPSULE ENDOSCOPY IN CELIAC DISEASE

- Treated Celiac Disease with alarm symptoms
- Initial diagnosis for atrophy in a patient with antitransglutaminase positive antibodies and unable for upper endoscopy.
- Abnormal imaging (excepting stricture)
- Refractory Celiac Disease
  - Type I
  - Type II

Figure 6: Scalloping of folds in a patient with CD.

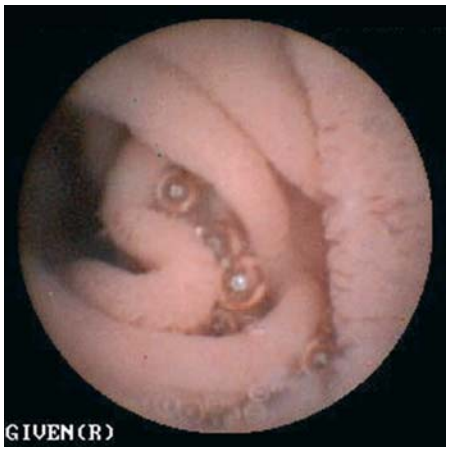

Figure 7: Nodular mucosa and mosaic pattern in a patient with CD.

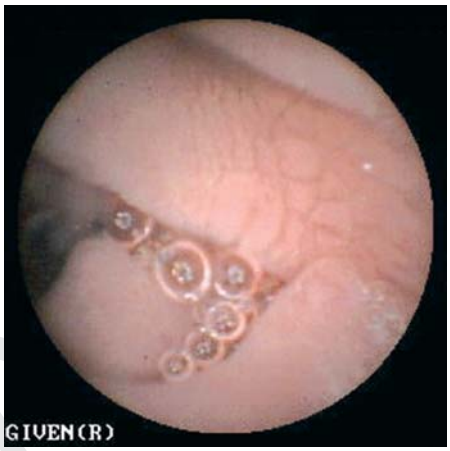

Figure 8: Nodular mucosa and mosaic pattern in a patient with CD.

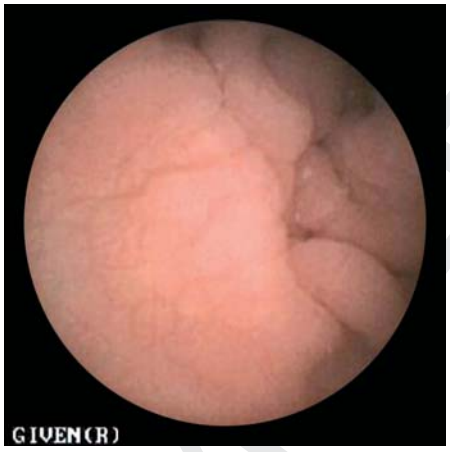

Figure 9: Nodular mucosa and scalloping of folds in a patient with CD.

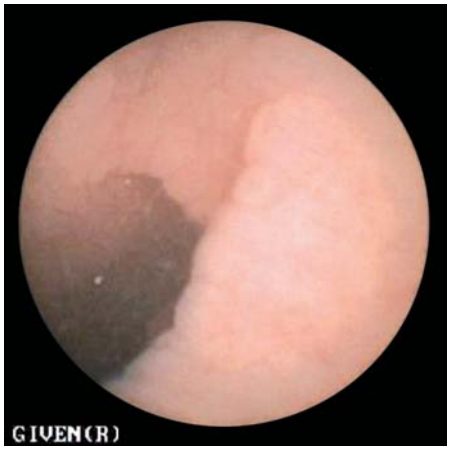

Figure 10: Jejunal nodular lymphoid hyperplasya in a patient with IgA deficit.

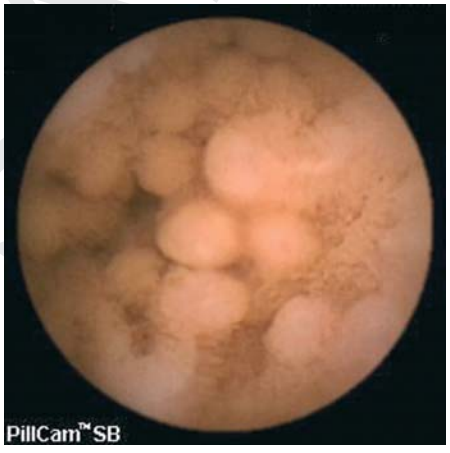

Figure 11: Mild villous atrophy (mosaic pattern) in the same patient.