

Abstract

Celiac disease (CD) is an immune-mediated enteropathy that is characterized by intraepithelial lymphocytosis, crypt hyperplasia, and villous atrophy. Prevalence is high and has been estimated to range between 0.5% and 1.5%. Capsule endoscopy (CE) has a sensitivity and specificity of approximately 90%. CD is an important differential diagnosis for diagnostic workup for anemia, malabsorption, or diarrhea, and must be recognized reliably by the investigator. Moreover, CE is the preferred method to screen for complications in CD, such as enteropathy-associated T-cell lymphoma, ulcerative jejunitis, and small bowel adenocarcinoma. This article is part of an expert video encyclopedia.

Keywords

Capsule endoscopy; Celiac disease; Small bowel; Video.

Video Related to this Article

Video available to view or download at doi:10.1016/S2212-0971(13)70092-X

Technique

Capsule endoscopy.

Materials

- Capsule endoscope: PillCam SB2; Given Imaging EMEA, Hamburg, Germany.
- RAPID 6 and Rapid Reader 7; Given Imaging EMEA, Hamburg, Germany.
- GIF-H180 and EVIS EXERA II CV-180; Olympus Europe, Hamburg, Germany.

Background and Endoscopic Procedure

Celiac disease (CD) is an immune-mediated enteropathy caused by mucosal exposure to wheat gluten in genetically susceptible persons, and HLA-DQ2 is found in 95% of the patients. Histologically, the bowel mucosa is characterized by intraepithelial lymphocytosis, crypt hyperplasia, and villous atrophy in affected subjects. Prevalence in the populations of North America and Western Europe is high and has been estimated to range between 0.5% and 1.5%. Four subtypes of clinical symptoms have been characterized: classical, atypical, silent, and latent celiac disease. With classical CD, typical symptoms such as diarrhea, abdominal distension, failure to thrive, or weight loss are predominant, and quite often this is a

manifestation in early childhood. In atypical CD, iron deficiency anemia, osteoporosis, arthritis, infertility, peripheral neuropathy, and abnormal liver function tests are accompanied by a variable degree of mucosal damage. Manifest villous atrophy in asymptomatic persons is called silent CD. Latent CD characterizes minor or no symptoms in patients with mild mucosal inflammation or immune activation and might present an early manifestation of the disease. Mucosal alterations such as atrophy are reliably detected by high-resolution endoscopy, but isolated lymphocyte infiltration of the mucosal layer without overt atrophy can hardly be visualized. In studies, capsule endoscopy (CE) has a sensitivity and specificity of approximately 90% to detect CD. Up to now, CE is not used as a screening method for CD. Serological tests (e.g., IgA and IgG-tissue transglutaminase, tTG, IgA-endomysial antibodies, EMA) and biopsies from the deep duodenum are the standard reference. Nevertheless, CE is the preferred method to screen for complications in CD, such as enteropathy-associated T-cell lymphoma (EATL), ulcerative jejunitis, and small bowel adenocarcinoma.

Key Learning Points/Tips and Tricks

- CD is an important differential diagnosis at CE.
- Villous atrophy is detected reliably by CE, but early stages without atrophy may be missed with this technique.

Scripted Voiceover

This is a case of a 32 year old female patient with severe malnutrition and diarrhea.

The capsule endoscope is passing the pylorus.

The descending duodenum is rapidly traversed; bile is seen within the lumen.

There is complete villous atrophy visualized in the duodenum and the proximal small bowel: Submucosal vessels are

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showing through, there is a loss of the duodenal and jejunal folds, and a nodular and mosaic pattern of the mucosa with scalloping of the circular folds may be noticed.

The magnification and motion views of capsule endoscopy enhance the detection of atrophy with a sensitivity of approximately 90%, but early stages such as “Marsh classification” stage 1 and 2 may be missed with this technique.

Complete visualization of the small bowel and high sensitivity for small bowel lesions favor the use of capsule endoscopy in patients in whom complications of celiac disease are suspected.

Capsule endoscopy findings resemble high-resolution upper gi-tract video-endoscopy.

Mosaic pattern of the mucosa and scalloping of the circular folds is well demarcated...

...and might even better been visualized with use of optical enhancement techniques such as narrow-band imaging.

Severe villous atrophy in the upper third of the small bowel contrasts well with the deeper parts of the small bowel in this case where normal mucosa is seen. Atrophy decreases and the mucosal architecture may normalize with progressing into the lower small bowel in many patients, but patchy manifestations of celiac disease have also been described.

Capsule endoscopy is useful to exclude enteropathy-associated T-cell lymphoma (EATL), ulcerative jejunitis, and small bowel adenocarcinoma. In case any of these complications of celiac disease were detected by video capsule endoscopy, plans can be made with balloon-assisted endoscopy to obtain specific samples for histologic review.

Further Reading

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