Diagnosis of celiac disease during pre-operative work-up for bariatric surgery

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Summary

Background and aim*. Morbid obesity is a highly prevalent condition. In selected cases, bariatric surgery is indicated. Although for decades celiac disease (CD) has been associated with chronic diarrhea and weight loss, now it becomes clear that the clinical spectrum is extremely wide.* ***Methods.*** *We report 5 morbidly obese patients that were diagnosed of CD during pre-operative work-up for bariatric surgery. Diagnosis was suspected during routine upper endoscopy, and confirmed by histology and positive CD-specific serology.* ***Result.*** *Four of the 5 cases were asymptomatic. One complained of chronic diarrhea and anemia. All cases initiated a gluten-free diet. Due to CD, patients were offered a purely restrictive bariatric procedure. Three patients underwent a sleeve gastrectomy while the other two are still undergoing pre-operative evaluations.* ***Conclusion.*** *This report enlarges the clinical spectrum of untreated CD. Although prevalence of CD in obese patients seems to be similar to that in the general population, morbid obese patients should be tested for CD in order to establish the best surgical strategy and outcome.*

Key words. *Morbid obesity, celiac disease, duodenoscopy, serology, sleeve gastrectomy, bariatric surgery.*

Diagnóstico de enfermedad celíaca durante la evaluación pre-quirúrgica para cirugía bariátrica

Resumen

Antecedentes y objetivo. *La obesidad mórbida es una enfermedad altamente prevalente. La cirugía bariátrica tiene indicación en casos seleccionados. Si bien durante décadas la enfermedad celíaca (EC) se ha asociado con diarrea crónica, pérdida de peso y desnutrición, en la actualidad se reconoce que el espectro clínico es mucho más amplio.* ***Métodos.*** *Presentamos 5 pacientes con obesidad mórbida a quienes se les diagnosticó una EC durante la realización del examen pre-quirúrgico para una cirugía bariátrica. El diagnóstico se sospechó durante la rutina de una endoscopía digestiva alta y fue confirmado por histología y serología específica para EC positiva.* ***Resultados.*** *Cuatro de los 5 casos eran asintomáticos al diagnóstico. Solo una paciente presentó diarrea crónica y anemia. A todos ellos se les indicó dieta libre de gluten. Se les ofreció un procedimiento bariátrico puramente restrictivo. Tres pacientes fueron sometidos a una gastrectomía en manga, mientras que los otros dos están aún en fase de evaluación.* ***Conclusión.*** *Este reporte amplía el espectro clínico de la EC no tratada. La prevalencia de EC en pacientes obesos parece ser similar a la de la población general. Los pacientes obesos mórbidos deberían ser evaluados para EC con el fin de establecer la mejor estrategia quirúrgica y mejorar los resultados.*

Palabras claves. *Obesidad mórbida, enfermedad celíaca, duodenoscopía, serología, manga gástrica, cirugía bariátrica.*

Morbidly obese patients are at risk of having medical conditions that are secondary to their overweight. This condition is considered epidemic in the western hemisphere affecting approximately 5.7% of the American adult population.[1]

Celiac disease (CD) is a chronic systemic condition characterized by an immune-mediated enteropathy triggered by gluten intake. Genetic predisposition is a key factor.[2] The disease affects almost 1% of the general population. The classical clinical picture

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involves chronic diarrhea, malabsorption and weight loss. However, the clinical presentation can be widely heterogeneous with symptoms appearing at any age. Recently, patients with mild symptoms (atypical clinical presentation) or even silent clinical course have been reported.[3] Overweight has been shown to affect nearly 13% of newly diagnosed cases.[4]

During the last 25 years both upper gastrointestinal endoscopy and serology have had a pivotal role in the detection of CD patients. Thus, studies have shown that duodenoscopy can identify characteristic mucosal markers determined by the celiac enteropathy.[5] In addition, endoscopy is routinely performed in the work-up of morbid obese patients enrolled in a bariatric surgery program.

The present study reports a series of 5 patients with a clear histological and serological diagnosis of CD who were diagnosed during an endoscopic study in the framework of a bariatric surgery program.

Report of cases

Clinical, serological and histological characteristics of cases at diagnosis of CD are summarized in table 1. Five middle aged (range: 29 to 56 years old) female patients undergoing an upper endoscopy within pre-operative routine evaluation for bariatric surgery were suspected of CD based on endoscopic findings. All of them presented mosaic pattern and scalloped folds in the second duodenal portion.[5] The histological analysis of endoscopically procured duodenal biopsies determined the presence of characteristic features of CD. Three patients had complete villous atrophy (type IIIc enteropathy according to the modified Marsh classification).[1,6] The remaining 2 patients had partial villous atrophy (type IIIb enteropathy). All patients exhibited positive CD-related serology confirming the gluten dependence of the histological damage. Four patients had abnormally increased serum concentrations of IgA anti-tissue transglutaminase antibodies (IgA atTG) and positive IgA endomysial antibody (EmA) tests. One patient was positive for IgA atTG and the recently developed DGP/tTG Screen assay detecting four different antibodies.[7]

When the most commonly reported symptoms associated with CD were considered, 4 patients had silent disease. One of these cases had a family history of the disorder with two children diagnosed of having CD. One patient suffered from chronic anemia and diarrhea. In this latter patient, routine laboratory tests evidenced a low hemoglobin concentration before endoscopic suspicion was raised. At diagnosis, three cases had low baseline medium corpuscular volume.

Three patients underwent a bariatric procedure, while the remaining 2 are still undergoing preoperative evaluations. Due to the underlying medical condition (CD), a purely restrictive procedure was performed (sleeve gastrectomy). Post-operative outcome was uneventful.

Table 1. *Clinical, serological and histological characteristics of patients at diagnosis of celiac disease.*

Case	Gender/ age (yr)	Clinical features	Weight (Kg)/BMI (Kg/m2)	Routine laboratory	CD serology	Histology
1	F/48	Silent/CD in family	120/41.4	Hb: 13.1; MCV: 79 Serum albumin: 4.2	atTG IgA: 43 U/mL EmA IgA: +	**IIIc**
2	F/29	Silent CD	117/42.2	Hb: 12.6; MCV: 88 Serum albumin: 4.	atTG IgA: 42 U/mL EmA IgA: +	**IIIc**
3	F/56	Silent CD	133/56.1	Hb: 12.4; MCV: 79 Serum albumin: 3.5	atTG IgA:>100 U/mL EmA IgA: +	**IIIb**
4	F/32	Silent CD	149/55.3	Hb: 12.2; MCV: 78 Serum albumin: 4.2	atTG IgA: 31 U/mL DGP/tTG: 39 U/mL	**IIIc**
5	F/35	Chronic anemia & diarrhea	136/51.1	Hb: 10.8; MCV: 83 Serum albumin: 3.8	atTG IgA: 128 U/mL EmA IgA: +	**IIIb**

CD: celiac disease. Gender, F: female. Serology is expressed as arbitrary Units (U/mL) for antibodies to tissue transglutaminase - atTG-, or positive (+) for endomysial antibodies –EmA-. Routine laboratory tests: Hb: haemoglobin (g/dL); MCV: median corpuscular volume (fL); Serum albumin (g/dL). The histological assessment of endoscopically procured duodenal biopsies was categorized according to the Marsh's modified classification (see text).

Discussion

The present is the first report involving the diagnosis of CD in morbidly obese patients undergoing an upper endoscopy during pre-operative work up for a bariatric procedure. All patients were adult females. Based on endoscopic view, the suspicion of being in front of a CD was raised. The diagnosis was supported on histology and specific CD-related serology.

The present report highlights some interesting findings. Firstly, the epidemiological aspect of this association deserves comments. Thus, the fact that our patients were collected in a single bariatric surgery program with almost 400 morbid obese patients evaluate, suggests that prevalence of CD in this particular population is at least comparable to that estimated for the Argentinean general population.[8,9] However, some evidence suggests that the real prevalence is underestimated. In this context, we must keep in mind that suspicion was raised based on endoscopic findings and that patients were not routinely screened for CD using serology and/or biopsy in all candidates. Several studies have concluded that the recognition of endoscopic markers of enteropathy is achieved in 60% or less of CD patients diagnosed in populations with low pre-test probability for CD.[10,11] Therefore, it seems probable that a proportion of cases could be missed despite the endoscopic view of the duodenum. Secondly, the fact that morbid obesity does not exclude the possibility of concomitance with CD expands the wide clinical spectrum of the disorder. Although one of these cases had typical clinical features of the disorder (chronic microcytic hypocromic anemia and diarrhea), the others were completely silent.

The presence of a potential malabsorptive state seems to be inconsistent with overweight patients. In CD, malabsorption is probably determined by small bowel villous atrophy and its subsequent reduction of absorptive surface, and by autoimmune phenomena.[12] A characteristic finding in CD is that the enteropathy is predominant in the duodenum and proximal intestinal areas. Although the extension of mucosal damage has not been associated with symptom intensity and deterioration,[13] it seems probable that the mucosal affectation would be restricted to the proximal intestine and that the remaining intestine could compensate the malabsorption. Another factor that deserves attention is the hyperphagia often present in patients with active CD.[3,4] It seems rational to think that a dysregulation of caloric intake plays a role in the genesis of obesity.

Weight gain after the initiation of a gluten-free diet (GFD) is a concern for non-obese patients with CD.[4,14] Interestingly, some authors reported weight loss in obese patients affected by CD when a GFD was prescribed[15] or, contrarily, when gluten intake increased.[16] However, the well-documented increased risk of long-term adverse outcomes (e.g. malignancies or other complications) makes initiation of a GFD mandatory.[17]

Bariatric procedures can be purely restrictive (e.g.: gastric banding and sleeve gastrectomy), primarily restrictive (e.g.: gastric bypass) or primarily malabsorptive (e.g.: biliopancreatic diversion with duodenal switch).[18] As CD alters the natural absorptive mechanism, it seems that any procedure affecting or interfering with absorption must be avoided. Other characteristics of CD that favor this decision are based on the fact CD can develop complications such as intestinal lymphoma. This situation requires the continuity of the gastrointestinal tract in order to establish a correct diagnostic algorithm.

Although being a practically unreported combination, patients with CD that undergo gastrointestinal surgical procedures may develop complications of the disease.[19] In this context, a Medline-based search identified two cases reported in the early 80´s where the diagnosis of CD was performed after a jejuno-ileal by-pass.[20,21] One of these patients died after surgery. With these concepts in mind, we think that morbidly obese patients with CD should be offered a procedure that does not bypass the duodenum. Patients in this report were offered a sleeve gastrectomy. Three patients were operated on after being placed on GFD. Post-operative follow-up was uneventful in all of them. None developed complication or classic symptoms of CD. After a mean follow up of 16 months, all 3 patients achieved a standard weight loss with a GFD and serological markers normalized their levels. The symptomatic patient is still undergoing pre-operative evaluations.

In conclusion, CD is a condition that can affect morbidly obese patients. This observation broadens the clinical spectrum of the disorder. The prevalence of this association seems to be similar to that estimated for CD in the general population. Obese patients with active CD can have a silent clinical course. Due to the clinical and surgical implications and eventual risks associated to both disorders, we recommend

endoscopic testing for all obese patients enrolling a bariatric surgery program, performing in the study a careful evaluation of the duodenum. Patients with an abnormal endoscopic appearance of the duodenum should be biopsed and serologically tested for CD. Morbidly obese patients with CD should be offered a surgical strategy that does not create additional malabsorptive conditions or avoids testing the GI tract for eventual complications of CD.

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