

**Supplementary Table 1.** Histologic Findings in 30 Patients With CS

Patient no.	Collagen deposition in the duodenum		Additional duodenal findings				
	Thickness average (minimum–maximum)	Distribution	IELs per 100 epithelial cells/clone present	Degree of villous atrophy	Epithelial denudation	Chronic inflammation	Acute inflammation
1	30 (20–40)	Diffuse	20/unknown	Total	Yes	Moderate	Mild with focal erosion
2	29	Diffuse	40/no	Subtotal	No	Marked	No
3	20 (18–22)	Patchy	60/no	Subtotal	No	Marked	Mild
4	30.5 (18–43)	Diffuse	20/unknown	Total	Yes	Marked	Mild
5	44 (18–70)	Diffuse	20/no	Total	Yes	Moderate	Moderate
6	21 (18–24)	Diffuse	40/no	Total	Yes	Marked	No
7	42 (24–60)	Patchy	50/no	Total	Yes	Moderate	No
8	52.5 (18–87)	Diffuse	20/no	Total	Yes	Moderate	Mild
9	30.5 (25–36)	Diffuse	20/no	Total	Yes	Moderate	No
10	22	Diffuse	50/no	Total	No	Moderate	No
11	32	Diffuse	20/no	Subtotal	No	Mild	No
12	28 (18–38)	Diffuse	40/no	Total	Yes	Marked	Mild
13	56.5 (18–95)	Diffuse	20/no	Total	Yes	Moderate	Mild with erosion
14	26.5 (18–35)	Diffuse	40/unknown	Total	Yes	Moderate	No
15	20.5 (18–23)	Diffuse	40/unknown	Total	Yes	Marked	No
16	28.5 (20–37)	Diffuse	70/unknown	Total	Yes	Marked	Moderate
17	29	Patchy	70/unknown	Subtotal	No	Marked	No
18	20	Patchy	100/unknown	Total	No	Marked	No
19	25 (18–32)	Diffuse	40/unknown	Total	Yes	Marked	No
20	24 (18–30)	Patchy	40/unknown	Subtotal	No	Moderate	No
21	24 (18–30)	Diffuse	50/unknown	Total	Yes	Marked	Mild
22	34 (18–50)	Diffuse	60/unknown	Total	Yes	Marked	Moderate
23	24 (18–30)	Diffuse	40/unknown	Total	Yes	Moderate	Mild
24	44.5 (26–63)	Diffuse	20/unknown	Total	Yes	Moderate	No
25	29	Diffuse	90/no	Total	No	Marked	No
26	32	Diffuse	40/no	Subtotal	No	Marked	No
27	31 (20–42)	Diffuse	60/no	Subtotal	Yes	Moderate	No
28	23 (18–28)	Patchy	40/no	Subtotal	Yes	Moderate	No
29	29	Diffuse	40/no	Subtotal	No	Moderate	No
30	20	Patchy	20/no	Subtotal	Yes	Moderate	Mild

**Supplementary Table 2.** Summary of Clinical Characteristics of 30 Patients With CS

Patient no.	Age/gender	Gluten sensitivity antibodies	Prior diagnosis of CD	Associated disorders	HLA-DQ genotype	Treatment	Outcome/histologic follow-up	Follow-up (mo)
1	57/F	(-)	No	Collagenous colitis	No DQ2/DQ8	GFD, then normal diet. Budesonide 9 mg/day	Clinical response. No follow-up biopsy	1
2	79/F	(-)	Yes	No	DQ2	GFD. Prednisone 30 mg/day, then budesonide 9 mg/day	Clinical response. No follow-up biopsy	9
3	82/F	(-)	Yes	Collagenous colitis, lymphocytic gastritis, pneumatosis intestinalis	N/A	GFD. Budesonide 9 mg/day. Total parenteral nutrition	Clinical response. Reversal of fibrosis but persistent total villous atrophy. Died of ischemic stroke and aspiration pneumonia	65
4	74/M	(-)	No	Lymphocytic colitis, chronic interstitial pneumonia, unexplained cirrhosis	DQ2	GFD. Prednisone 70 mg/day, then budesonide 9 mg/day. Total parenteral nutrition	Clinical response. Remission	9
5	85/F	(-)	No	Lymphocytic colitis, collagenous gastritis, small-bowel bacterial overgrowth	DQ2	GFD. Budesonide 9 mg/day. Total parenteral nutrition	Clinical response. Remission	16
6	68/M	(-)	No	Collagenous gastritis, lymphocytic gastritis, small-bowel bacterial overgrowth	DQ2 homozygous	GFD. Budesonide 9 mg/day	Clinical response. Persistent villous atrophy and collagen deposition on follow-up biopsy	12
7	56/F	(-)	Yes	Hypothyroidism, unexplained cirrhosis	DQ2	GFD. Prednisone 40 mg/day plus azathioprine 150 mg/day, then budesonide 9 mg/day. Total parenteral nutrition	Clinical response. Persistent villous atrophy and collagen deposition on follow-up biopsy	21
8	55/F	(-)	No	Lymphocytic colitis, small-bowel bacterial overgrowth	DQ2	GFD. Budesonide 9 mg/day	Clinical response. Persistent villous atrophy and collagen deposition on follow-up biopsy	12
9	78/F	(+)	Yes	No	DQ2	GFD. Total parenteral nutrition	No response. Persistent villous atrophy and collagen deposition on follow-up biopsy	24
10	66/F	(-)	Yes	Collagenous colitis, small-bowel bacterial overgrowth	DQ2 and DQ8	GFD. Budesonide 9 mg/day	Clinical response. Reversal of fibrosis but persistent total villous atrophy	84
11	81/F	(-)	No	Collagenous colitis, combined variable immunodeficiency	No DQ2/DQ8	GFD, then normal diet. Prednisone 20 mg, then budesonide 9 mg/day	Clinical response. Persistent villous atrophy and collagen deposition on follow-up biopsy	14
12	59/F	(-)	Yes	No	DQ2	GFD. Dexamethasone 8 mg/day. Total parenteral nutrition	No response. Reversal of fibrosis but persistent total villous atrophy. Died of malnutrition and sepsis	6
13	67/F	(-)	Yes	Autoimmune hepatitis, hyposplenism, Raynaud's phenomena	DQ2	GFD. Prednisone 40 mg/day, then budesonide 9 mg/day	Clinical response. Reversal of fibrosis but persistent partial villous atrophy	24
14	64/F	(-)	No	Discoid lupus, antiphospholipid syndrome, small-bowel bacterial overgrowth	N/A	GFD. Prednisone 40 mg/day. Total parenteral nutrition	Clinical response. No follow-up biopsy	12
15	59/F	(+)	Yes	No	N/A	GFD. IV iron supplementation	Clinical response. No follow-up biopsy	10
16	77/F	(-)	No	Osteoporosis	N/A	GFD. Budesonide 9 mg/day	Clinical response. No follow-up biopsy	8
17	91/M	(-)	No	Chronic pancreatitis	DQ2 homozygous	GFD. Budesonide 9 mg/day. Pancreatic enzymes	Inadequate follow-up. No follow-up biopsy	1
18	75/M	(+)	Yes	Hypothyroidism, side-branch intraductal mucinous pancreatic tumor	N/A	GFD. Total parenteral nutrition	No response. No follow-up biopsy	26

Supplementary Table 2. Continued

Patient no.	Age/gender	Gluten sensitivity antibodies	Prior diagnosis of CD	Associated disorders	HLA-DQ genotype	Treatment	Outcome/histologic follow-up	Follow-up (mo)
19	79/F	(-)	No	No	No DQ2/DQ8	GFD. Budesonide 9 mg/day	Clinical response. Remission	24
20	67/F	(-)	No	Lymphocytic myocarditis, recurrent iritis	DQ2 and DQ8	GFD. Prednisone 40 mg/day, then 20 mg/day and budesonide 9 mg/day	Clinical response. No follow-up biopsy	6
21	80/M	(-)	No	Small-bowel bacterial overgrowth, adult-onset autoimmune enteropathy	No DQ2/DQ8	GFD, then normal diet. Prednisone 40 mg/day, then budesonide 9 mg/day	Clinical response. No follow-up biopsy	1
22	62/F	(-)	No	Collagenous colitis	N/A	GFD. Octreotide. Total parenteral nutrition	No response. No follow-up biopsy	1
23	72/M	(-)	No	No	N/A	GFD. Prednisone 60 mg/day, then 20 mg/day	Clinical response. No follow-up biopsy	19
24	79/F	(-)	No	Small-bowel bacterial overgrowth, adult-onset autoimmune enteropathy	DQ2	GFD. Budesonide 9 mg/day	Clinical response. Remission	20
25	85/M	(-)	No	Benign pancreatic duct stricture	DQ2	GFD. Prednisone 40 mg/day. Total parenteral nutrition	Clinical response. No follow-up biopsy	14
26	58/F	(-)	Yes	Small-bowel bacterial overgrowth	DQ2	GFD. Prednisone 40 mg/day, then budesonide 9 mg/day	Clinical response. Remission	24
27	76/M	(-)	No	No	No DQ2/DQ8	GFD. Budesonide 9 mg/day	Clinical response. No follow-up biopsy	5
28	75/F	(-)	No	Collagenous colitis, adult-onset autoimmune enteropathy, hypothyroidism	DQ2	GFD. Prednisone 40 mg/day, then budesonide 9 mg/day	Clinical response. Persistent villous atrophy and collagen deposition on follow-up biopsy	24
29	62/F	(-)	Yes	Lymphocytic colitis	DQ2	GFD. Prednisone 40 mg/day, azathioprine 50 mg/day	Clinical response. No follow-up biopsy	24
30	75/F	(-)	No	Unexplained chronic renal failure, hypothyroidism	N/A	GFD. Budesonide 9 mg/day	Inadequate follow-up. No follow-up biopsy	1