

# Keeping an eye on Crohn's disease: Orbital myositis as the presenting symptom

Carol A Durno MD, Robert Ehrlich MD, Robert Taylor MD, J Raymond Buncic MD,  
Peter Hughes MD, Anne Marie Griffiths MD

CA Durno, R Ehrlich, R Taylor, JR Buncic, P Hughes, AM Griffiths. Keeping an eye on Crohn's disease: Orbital myositis as the presenting symptom. *Can J Gastroenterol* 1997;11(6): 497-500. Episodic periorbital swelling due to presumed orbital inflammation and myositis caused intermittent apparent proptosis and was the presenting symptom of ileocecal Crohn's disease (CD) in a teenage female with a family history of autoimmune disorders and CD. Orbital myositis, a very rare extraintestinal manifestation of inflammatory bowel disease (IBD), likely represents a process of impaired immunoregulation related to the underlying intestinal inflammation. This rare manifestation of IBD simulates the more commonly encountered thyroid orbitopathy (ophthalmopathy), but IBD should be considered if all thyroid tests are negative. It is important to recognize that orbital myositis may be an extraintestinal manifestation of Crohn's disease so that the diagnosis can be made and appropriate therapy commenced.

**Key Words:** *Autoimmune disorders, Crohn's disease, Extraintestinal manifestations, Orbital myositis, Proptosis*

## Surveillance de la maladie de Crohn : myosite orbitale comme premier signe

**RÉSUMÉ :** L'enflure péri-orbitale épisodique due à une inflammation orbitale présumée et la myosite ont provoqué une proptose apparente intermittente et ont été les premiers signes de la maladie de Crohn iléocœcale chez une adolescente ayant des antécédents de troubles autoimmuns et de maladie de Crohn. La myosite orbitale, manifestation extra-intestinale très rare de la maladie inflammatoire de l'intestin, représente probablement une anomalie du processus d'immunorégulation associée à l'inflammation intestinale sous-jacente. Cette rare manifestation de la MII simule l'orbitopathie thyroïdienne plus fréquente (ophtalmopathie), mais les MII doivent être envisagées si tous les tests de la thyroïde sont négatifs. Il est important de reconnaître que la myosite orbitale peut être une manifestation extra-intestinale de la maladie de Crohn pour que le diagnostic puisse être posé et que le traitement approprié puisse être instauré.

Extraintestinal manifestations occur commonly in patients with inflammatory bowel disease (IBD). Major ocular complications occur in up to 10% of all patients but are rare in pediatric patients (1-5). Only three cases of 'orbital pseudotumour' associated with Crohn's disease (CD) have been described previously. The patients in those cases were all in their early teens and had ileal CD (6-8). In this paper, we report a patient in whom episodic apparent prop-

ptosis was the presenting and major feature of underlying CD and in whom diagnosis was delayed considerably. This rare manifestation of IBD simulates the more commonly encountered thyroid orbitopathy (ophthalmopathy), but IBD should be considered if all thyroid tests are negative. It is important to recognize that orbital myositis is an extraintestinal manifestation of CD so that the diagnosis can be made and appropriate therapy commenced.

*This paper was a winning entry in the Consultations in Gastroenterology case study competition that was initiated and funded with the generous support of Astra Canada and is endorsed by the Canadian Association of Gastroenterology*

*Divisions of Gastroenterology and Nutrition, Endocrinology and Ophthalmology, The Hospital for Sick Children, University of Toronto, Toronto, Ontario*

*Correspondence and reprints: Dr Anne M Griffiths, Division of Gastroenterology/Clinical Nutrition, 555 University Avenue, Toronto, Ontario M5G 1X8. Telephone 416-813-6185, fax 416-813-6531, e-mail anne.griffiths@mailhub.sickkids.on.ca*



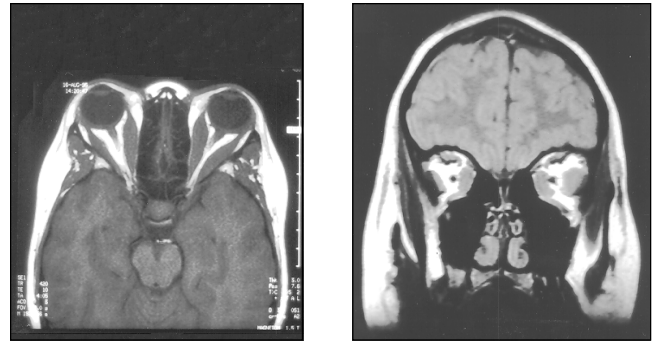
**Figure 1)** Downward gaze. Restriction of downward gaze, proptosis and bilateral periorbital edema with erythema

### CASE PRESENTATION

A 12-year-old female had been well until 10 months before gastrointestinal evaluation. Her major symptom had been episodic periorbital swelling and apparent proptosis. The initial episode of ocular swelling occurred in May 1995. The swelling resolved without any specific treatment. Three months later, she experienced a recurrence of 'puffy eyes', eye pain, bifrontal headaches, watery diarrhea and vomiting. The family history was significant for autoimmune diseases, including Graves' ophthalmopathy in the mother. A maternal aunt had Graves' disease, and a maternal cousin had systemic lupus erythematosus (SLE).

On examination at the second occurrence, the patient was well nourished (weight 75 kg, 97th centile); height 159 cm, 75th centile) and had normal vital signs. She had bilateral periorbital edema with erythema, ptosis (more marked in the right eye than in the left) and proptosis (Figure 1). There was no conjunctival injection. Visual acuity was 20/20 bilaterally with ophthalmoparesis. The discs were normal. There was no evidence of a goitre, thyroid bruit or sweaty palms. The abdominal, respiratory, skin and neurological examinations were unremarkable. The eye symptoms resolved gradually over the next two weeks with disappearance of the vomiting. She continued to complain of intermittent bifrontal headaches. Extraocular movements improved with some restriction, particularly in the lateral and upward gaze. Minimal conjunctival injection with prominence of the episcleral veins laterally was noted.

Laboratory evaluation during the second episode of ocular swelling was normal, except for an elevated platelet count of  $478 \times 10^9/L$  (normal 150 to  $450 \times 10^9/L$ ) and a low mean red cell volume of 72.3 fL (normal 80 to 90 fL). The blood film showed red blood cell hypochromia and microcytosis. The erythrocyte sedimentation rate was slightly elevated at 14 mm/h (normal 1.0 to 10 mm/h). Specifically, both the albumin and the thyroid laboratory evaluations were unremarkable. Bacterial cultures of the stool and investigations for ova and parasites were negative. Magnetic resonance imaging of the brain and orbits revealed bilateral proptosis and marked enlargement of the orbital muscles, with normal



**Figure 2)** Magnetic resonance imaging of the orbits demonstrating marked enlargement of the inferior, medial and lateral ocular muscles, prominence of the orbital fat and bilateral proptosis. **Left** Sagittal image; **Right** Coronal image

brain parenchyma consistent with Graves' ophthalmopathy (Figure 2). No treatment was given, and the teenager was followed closely as an out-patient.

Eight months after the initial episode of ocular swelling the patient experienced a third episode with blurred vision, eye pain, headaches, 'puffy' eyes and associated vomiting. On examination, there was edema of the upper lids and bluish lower lids. A prominent episcleral vein was again present on the lateral aspect of the right globe. There was a mild conjunctival congestion present. Visual acuity remained 20/20. A mild proptosis was noted along with limitation of adduction, abduction and upward gaze. The patient was started on prednisone 2 mg/kg and within 24 h she showed a dramatic improvement in eye symptoms and signs with concurrent resolution of the vomiting.

During the third episode of ocular swelling the results of the thyroid-stimulating immunoglobulin assessment became available. The antibody was negative, which was inconsistent with the working diagnosis of Graves' ophthalmopathy. In the interim, the maternal aunt with a history of SLE was diagnosed with Crohn's disease, and the present patient's mother asked whether her daughter's eye findings could be related to Crohn's disease.

At the time of the gastrointestinal evaluation, the patient was questioned closely about her gastrointestinal symptoms. Between episodes of ocular swelling, the patient was well. She had a two-year history of two to three loose stools per day with no blood. There were some mild associated abdominal cramps. She had previously been overweight – in the year before gastrointestinal evaluation she had lost 6 kg but remained overweight.

The physical examination was essentially normal. There was no evidence of clubbing, and abdominal and perianal examinations were unremarkable. Her weight was 73.9 kg (127% of the ideal weight for her height). Ocular examination revealed no evidence of periorbital swelling with a full range of extraocular movements. However, laboratory testing revealed a decrease in hemoglobin to 105 g/L (normal 110 to 140 g/L), a decrease in the mean cell count to 67.3 fL (normal 80 to 90 fL) and a decrease in ferritin to 20 mg/L

(normal 22 to 400 mg/L). The platelet count increased to  $621 \times 10^9/L$  (normal 150 to  $450 \times 10^9/L$ ), and the erythrocyte sedimentation rate was elevated to 50 mm/h (normal less than 10 mm/h). The alpha-1-acid glycoprotein was 2.2 g/L (normal 0.4 to 1.3 g/L). Small-bowel radiography demonstrated irregularity of the terminal ileum. Upper endoscopy of the esophagus, stomach and duodenum was macroscopically normal. Colonoscopy revealed ulceration of the ileocecal valve. The pathology demonstrated active granulomatous inflammation in the antral mucosa and focal inflammation in the duodenum (Figure 3). Cryptitis and pericryptitis were noted on the specimen from the ileocecal valve.

On treatment with oral timed-release 5-aminosalicylic acid (5-ASA), the patient experienced resolution of her diarrhea. In six months of follow-up she did not experience a recurrence of orbital myositis.

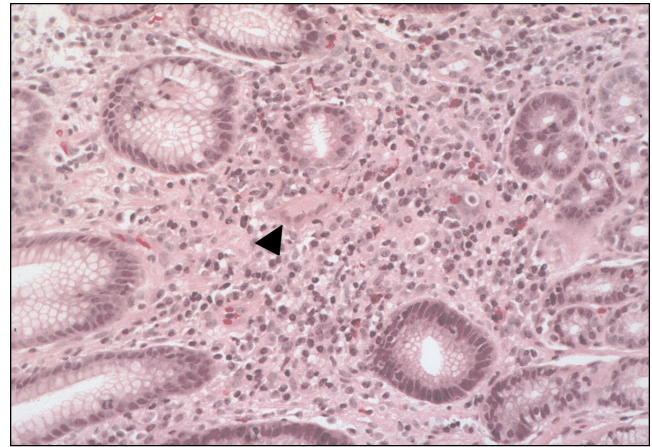
### DISCUSSION

Extraintestinal manifestations occur commonly in patients with IBD. Major ocular complications of IBD occur in up to 10% of all patients but are rare in pediatric patients (1-5). Three cases of 'orbital pseudotumour' associated with CD have been published. Patients in those cases were all in their early teens and had ileal CD (6-8). We report a case in which the ocular symptoms and findings brought the patient to medical attention. It is important to recognize that orbital myositis is an extraintestinal manifestation of Crohn's disease so that the diagnosis can be made and appropriate therapy commenced. Being aware of this association will ensure that potentially harmful therapies such as radiotherapy can be avoided. Young et al (6) intimated that surgical therapy may be necessary for the ultimate control of the extraintestinal orbital lesion, but in two subsequent reports, patients responded to prednisone therapy (6). Our case represents the first published report in which oral 5-ASA therapy alone has been used to control intestinal inflammation. The ocular manifestations have not yet recurred.

The patient we report had ocular findings that would most commonly be secondary to Graves' ophthalmopathy. Approximately 10% of patients with ophthalmopathy do not have hyperthyroidism. The majority of these patients have laboratory evidence of thyroid immune disease including antibodies to thyroid peroxidase or thyrotropin receptors (9). The negative test for thyroid-stimulating immunoglobulin in our patient made Graves' ophthalmopathy much less likely.

'Orbital pseudotumour' is a nonspecific term used to describe an inflammation-induced enlargement of any structure in the retrobulbar space resulting in a constellation of clinical findings similar to those of retrobulbar tumours. Signs and symptoms, many of which our patient experienced, include retro-orbital pain, diplopia, proptosis, ophthalmoplegia, eyelid swelling, decreased vision, conjunctival injection and chemosis (10).

Orbital myositis, an acute or chronic nonspecific inflammation of the extraocular muscle (11,12), is one cause of orbital pseudotumour and must be distinguished from infectious



**Figure 3)** Focal active granulomatous inflammation with multinucleated giant cell (arrowhead) in the antral mucosa biopsy

cellulitis, cavernous sinus thrombosis, arteriovenous malformation, neoplasm or myasthenia gravis. Although orbital myositis is often idiopathic, it has been associated with scleroderma, SLE, Lyme disease and Crohn's disease, and has also been observed after upper respiratory tract infections (13-16). The diagnosis of orbital myositis is based on the characteristic history and clinical findings, as well as on the radiographic findings of diffuse thickening of the muscle and tendon of one or more of the ocular muscles (17).

Autoimmune phenomena may be prominent in IBD. There is a high incidence of associated autoimmune diseases with IBD, including hypothyroidism, primary sclerosing cholangitis, vitiligo and alopecia areata (18). It is interesting that orbital myositis has also been associated with a multitude of autoimmune diseases, as mentioned above. Our patient had a family history with a high prevalence of autoimmune diseases. Considerable evidence has been presented to suggest that uveitis, an inflammation of the pigmented vascular layer of the eye that is the most common ocular manifestation of IBD, has an immunological basis (19-21). Uveitis has been strongly associated with several autoimmune diseases other than IBD – for example, hepatitis B surface antigen-negative chronic active hepatitis, Hashimoto's thyroiditis and Coombs'-positive hemolytic anemia (22). Various strategies have been employed in an attempt to identify the underlying pathogenesis of these autoimmune eye findings. A specific peptide, 7E<sub>12</sub>H<sub>12</sub>-reactive peptide, has recently been shown to be shared by colonic epithelium and the nonpigmented epithelial layer of the ciliary processes of the eye (23). Studies including the evaluation of ocular muscles for this peptide would be informative. If the peptide proves to be present, such studies would provide collaborative evidence of the underlying pathogenesis of extraintestinal complications in patients with IBD.

### CONCLUSIONS

Bilateral orbital myositis may be an early initial sign of IBD. This rare manifestation of IBD simulates the more commonly encountered thyroid orbitopathy (ophthalmopathy),

but IBD should be considered if all thyroid tests are negative. A careful gastrointestinal history is warranted, including questioning regarding a family history of IBD.

---

**ACKNOWLEDGEMENTS:** The authors acknowledge the support of Dr Ernest Cutz, Professor of Pathology, The Hospital for Sick Children and The University of Toronto, Toronto, Ontario for interpretation and photographs of the biopsy material.

---

#### REFERENCES

1. Pettei MJ, Davidson M. Extra gastrointestinal manifestations of inflammatory bowel disease. *J Pediatr Gastroenterol Nutr* 1985;4:689-91.
  2. Daum F, Gould HB, Gold D, et al. Asymptomatic transient uveitis in children with inflammatory bowel disease. *Am J Dis Child* 1979;133:170-1.
  3. Strauss RE. Ocular manifestations of Crohn's disease: literature review. *Mt Sinai J Med* 1988;55:353-6.
  4. Knox DL, Schachat AP, Mustonen E. Primary, secondary and coincidental ocular complications of Crohn's disease. *Ophthalmology* 1984;91:163-73.
  5. Petrelli EA, McKinley M, Troncale FJ. Ocular manifestations of inflammatory bowel disease. *Ann Ophthalmol* 1982;14:356-60.
  6. Young RSK, Hodes BL, Cruse RP, et al. Orbital pseudotumor and Crohn's disease. *J Pediatr* 1981;99:250-2.
  7. Weinstein JM, Koch K, Lane S. Orbital pseudotumor in Crohn's colitis. *Ann Ophthalmol* 1984;16:275-8.
  8. Camfield PR, White M, Warner HA, et al. Orbital pseudotumor and Crohn's disease. *J Pediatr* 1982;101:157-8.
  9. Salvi M, Zhang Z-G, Haegert D, et al. Patients with endocrine ophthalmopathy not associated with overt thyroid disease have multiple thyroid immunologic abnormalities. *J Clin Endocrinol Metab* 1990;70:89-94.
  10. Squires RH, Zwiener RJ, Kennedy RH. Orbital myositis and Crohn's Disease. *J Pediatr Gastroenterol Nutr* 1992;15:448-51.
  11. Weinstein GS, Dresner SC, Slamovits TL, et al. Acute and subacute orbital myositis. *Am J Ophthalmol* 1983;96:209-17.
  12. Slavin ML, Glaser JS. Idiopathic orbital myositis. *Arch Ophthalmol* 1982;100:1261-5.
  13. Arnett FC, Michels R. Idiopathic ocular myopathy in systemic sclerosis (scleroderma). *Arch Intern Med* 1973;132:740-3.
  14. Grimson BS, Simons KB. Orbital inflammation, myositis, and systemic lupus erythematosus. *Arch Ophthalmol* 1983;101:736-8.
  15. Seidenberg KB, Leib ML. Orbital myositis with Lyme disease. *Am J Ophthalmol* 1990;109:13-6.
  16. Purcell JJ, Taulbee WA. Orbital myositis after upper respiratory tract infection. *Arch Ophthalmol* 1981;99:437-8.
  17. Nugent RA, Rootman J, Robertson WD, et al. Acute orbital pseudotumors: classification and CT features. *Am J Roentgenol* 1981;137:957-62.
  18. Snook JA, Silver HJ, Jewell DP. The association of autoimmune disorders with inflammatory bowel disease. *Q J Med* 1989;269:835-40.
  19. Epstein WV, Tan M, Easterbrook M. Serum antibody to double stranded RNA & DNA in patients with idiopathic and secondary uveitis. *N Engl J Med* 1971;285:1502-6.
  20. Feinberg EB, Shore B, Leopold IM, et al. Cellular immunity in chronic ophthalmic disorders. *Am J Ophthalmol* 1972;73:68-72.
  21. Manal A, Dasgupta A, Das KM. Autoantibodies in sclerosing cholangitis against a shared epitope in biliary and colon epithelium. *Gastroenterology* 1994;106:185-92.
  22. Gery I, Mochizuki M, Nussenblatt RB. Retinal specific antigens and immunopathogenic processes they provoke. In: Osborne N, Chader J, eds. *Retinal Research*. Oxford: Pergamon, 1986:75-109.
  23. Bhagat S, Das KM. A shared and unique peptide in the human colon, eye, and joint detected by a monoclonal antibody. *Gastroenterology* 1994;107:103-8.
-





**Hindawi**  
Submit your manuscripts at  
<http://www.hindawi.com>

