

Case report

Wireless Capsule Endoscopy in Small Bowel Crohn's Disease

Subasinghe Dona Lilanthi Padmika Subasinghe¹ , Nawagamuwage Iresha Chandima Perera¹, Asoka Ratnatilaka¹

¹National Hospital, Sri Lanka.

Abstract

Crohn's disease (CD) is one of the two types of inflammatory bowel disease (IBD) characterized by immune-mediated granulomatous bowel inflammation leading to a variety of intestinal and extra-intestinal manifestations. Although gastrointestinal endoscopy remains an important investigation in macroscopic diagnosis, the subgroup of 20-30% patients with small bowel-limited disease does not benefit either from endoscopy or barium studies. We report a case of a young Sri Lankan male who presented with long term malabsorption and chronic hypoalbuminemia, extensively investigated for the underlying cause and finally being diagnosed to have small bowel Crohn's disease following wireless video capsule endoscopy. The case highlights the fact that with the advent and increased use of wireless capsule endoscopy, a better alternative is available for evaluating suspected small bowel CD without radiation exposure and its use should be made popular among the clinicians since the facility is available in the government sector and the prevalence of IBD is found to be significant in the local population than it was once thought to be.

Key words: Wireless capsule endoscopy; Crohn's disease; Hypoalbuminaemia; Protein-losing enteropathy; Malabsorption syndrome

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 **Correspondence:** lilanthisubasi@gmail.com

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Introduction

Crohn's disease (CD) is one of the two types of inflammatory bowel disease (IBD) characterized by immune-mediated granulomatous bowel inflammation leading to a variety of intestinal and extra-intestinal manifestations (1). Gastrointestinal (GI) endoscopy (colonoscopy with ileoscopy) and barium contrast studies remain two of the important and widely available investigations in diagnosis of CD with different sensitivities and specificities depending on various factors (2, 3). Both the techniques are operator-dependent as well with a statistically significant low yield (4, 5). However confirming the diagnosis in the subgroup of 20-30% of patients with small bowel-limited disease is difficult (2, 3). In such circumstances wireless capsule endoscopy (WCE) aids in providing the correct diagnosis, during early stages of the disease and in less severe forms.

Case presentation

A 30-year-old male presented with malaise, non-specific abdominal pain, back pain, progressive lack of weight gain and anorexia for 15 years and ankle swelling for 5 years. He did not have any urinary symptoms, any past or contact history of tuberculosis and had not been on long-term non-steroidal anti-inflammatory drugs. On examination he was pale, with a body mass index of 15 kg/m², had leuconychia with grade 2 clubbing and bilateral pitting ankle oedema. Preliminary investigations showed iron deficiency anaemia (transferrin saturation 9%) with a haemoglobin (Hb) of 8.4g/dL (11-18g/dL) and severe hypoalbuminaemia with a total protein of 40g/L (61-77g/L) and serum albumin of 21g/L (36-48g/L). Bone profile revealed low ionized calcium [0.9mmol/L (1-1.3mmol/L)], low phosphate [0.7mmol/L (0.8-1.5mmol/L)], high Alkaline phosphatase [436 U/L (100-360 U/L)], low vitamin D level [24ng/ml (30-50ng/ml)], elevated intact parathyroid hormone level [60pg/ml (10-15pg/ml)] and dual-energy x-ray absorptiometry scan showing spinal T score of (-2.6) suggesting co-existing osteomalacia with secondary hyperparathyroidism and osteoporosis. He had no albuminuria or proteinuria. Stool full report, transaminases and clotting profile were normal. He was HLA DQ2/DQ8 negative and had an ESR of 46 mm/1st hour. Alpha-1 anti-trypsin clearance and Technetium 99 labeled albumin scintigraphy were not carried out due to unavailability. He underwent upper and lower GI endoscopy with blind biopsies, barium follow-through with enteroclysis and small intestinal enteroscopy upto proximal jejunum with six-point biopsies, results of which did not reveal any positive findings. Finally WCE was arranged and it affirmed multiple linear and circumferential ulcers throughout small bowel with intervening normal areas. The follow-up double balloon enteroscopy demonstrated areas of scalloping with erosions. These findings were in favour of either Crohn's disease or non-steroidal anti-inflammatory drug-induced enteropathy and histology of the biopsies showed increased intraepithelial lymphocytes. Since his history was negative for longterm non-steroidal anti-inflammatory drug ingestion, the diagnosis was made as

small bowel CD and he was commenced on oral prednisolone 40mg/day, azathioprine 25mg/day, iron and folate supplementation and bone protective therapy. A significant clinical improvement was observed with resolution of constitutional symptoms, with a weight gain of 8 kg, ESR declining to 23mm/1st hour, Hb rising to 10.4g/dl (11-18g/dl) and serum albumin rising up to 33g/L (36-48g/dL) within the first 2 months of treatment.

Discussion

Since CD can involve any part of the GI tract, the clinical manifestations are significantly influenced by the site (1). It most commonly involves the small intestine (3). Our patient's presentation was malabsorption and protein losing enteropathy due to small intestinal involvement with secondary osteomalacia and osteoporosis. The diagnosis of CD is made using a combination of clinical, endoscopic, radiological, histological and biochemical tests (3). In this patient the underlying diagnosis was tentatively assumed to be IBD since other possibilities were excluded by the history and investigations and was confirmed by WCE along with the aid of histology (6). Although traditional endoscopy and biopsy remain the primary mode of establishing a clinically suspected diagnosis of CD, it is a challenge when the disease process involves only the small intestine. While radiological expertise is still valuable in evaluating small bowel Crohn's with barium studies (4), in a sub-group of patients in whom barium studies are negative the need arises for detailed macroscopic evaluation of the mucosa (2). All the other visualizing methods are less sensitive and have drawbacks with regard to need for anesthesia, technical difficulties and procedure-specific complications (4). This has led to the increased use of the novel technique, WCE, which allows direct visualization of the entire small bowel mucosa in colour and in detail (1). This is non-invasive, safe and has high quality imaging (5). The main potential adverse effects related to the procedure, although rare, are capsule retention especially in the setting of diverticulosis, strictures, intestinal perforation, and tracheal aspiration. In Sri Lanka it is available in the government sector (National Hospital of Sri Lanka) and in a few centers at the private sector, with a procedure (single-use capsule) costing around Rs 100,000. This has an establishment cost of around Rs 4,000,000. It is commonly used in the evaluation of obscure gastro-intestinal bleeding, polyposis syndromes and iron deficiency anaemia.

As already discussed, patients with distal ileal lesions can often be diagnosed with routine colonoscopy and ileoscopy, but when the disease involvement is more proximal or when intubating the ileocecal valve is not possible, the remaining radiological options are barium follow through, CT enterography (a special type of CT imaging performed with intravenous contrast material after the ingestion of contrast liquid that helps produce high resolution images of the small intestine in addition to the other structures in the abdomen and pelvis), enteroclysis.



Examined small bowel, with intervening normal areas. At some points of ulceration (U), mucosa appears oedematous, lumen is narrowed and capsule movement is delayed suggesting strictures (Capsule ID - JSGCAN7)

(same procedure as enterography but with introduction of intraluminal contrast with tube placement) and push enteroscopy [a longer endoscope (enteroscope) is introduced through the mouth and slowly advanced through the stomach, duodenum and into the jejunum by a gentle pushing action]. According to published data the sensitivity and diagnostic yield of detecting early and subtle lesions of CD have been found to be greater with WCE than barium follow-through, CT enterography

(1,3,5), enteroclysis (2), push enteroscopy and colonoscopy with retrograde ileoscopy (3).

Therefore as in our patient, with the advent and increased use of WCE, a better alternative is available for evaluating suspected small bowel CD without radiation exposure. The main limitations are the cost involved, the relatively poor image quality because of faecal residue (Sri Lankan patients might benefit from a different form of bowel preparation) and the low yield of the follow up double-balloon enteroscopy not providing more confirmatory histological evidence.

Conclusion

This patient illustrates that capsule endoscopy is a valuable diagnostic tool when there is a suspicion of Crohn's disease which cannot be confirmed using standard imaging techniques.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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