Adenomatous Polyposis in a Young Jamaican Male of African Descent

R Alfred, M Mills

ABSTRACT

We report a case of adenomatous polyposis in a 20-year old African Jamaican male. This is to highlight the importance of aggressively investigating unexplained recurrent anaemia in the young and the impact of psychosocial issues that arise in managing such a patient.

Keywords: Adenomatous polyposis, Jamaica, male, polyposis

Poliposis Adenomatosa Familiar en un Joven Jamaicano de Ascendencia Africana

R Alfred, M Mills

RESUMEN

Reportamos un caso de poliposis adenomatosa familiar en un joven jamaicano-africano de 20 años. El objetivo es resaltar la importancia de investigar agresivamente la anemia recurrente que se produce sin explicación en los jóvenes, así como el impacto de los problemas psicosociales que surgen en el tratamiento de tales pacientes.

Palabras claves: Poliposis adenomatosa, Jamaica, varón, poliposis

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INTRODUCTION

Cases of *de novo* familial adenomatous polyposis (FAP) require genetic testing and timely colectomy as prophylaxis against colon cancer (1). The incidence of FAP is one in 10 000 to one in 7000 but the incidence of malignancy in FAP approaches 100% (2). The support of a multidisciplinary team is of paramount importance in management. In the Caribbean, where religion can forgo medically grounded decisions, this sometimes may prove challenging in such rare entities that are not inherent to our population.

CASE REPORT

A 20-year old male was referred to the University Hospital of the West Indies, Jamaica, by his general practitioner. He had presented with fatigue, exertional dyspnoea, generalized weakness and weight loss. He admitted to seeing dark red blood mixed with his stool occasionally and epigastric discomfort. A recent barium meal confirmed a diagnosis of peptic ulcer disease. Despite therapy with proton pump inhibitor and repeat haematinics (Hb plus), his prior haemoglobin of 3.8 g/dL failed to improve. His past medical history included three years of chronic headaches. At that time, he had also complained of anal pruritus and investigations revealed iron deficiency anaemia and giardiasis. Haemoglobin (Hb) was 3.3 g/dL. He received metronidazole and oral iron therapy and after a few months, his subsequent haemoglobin was 8 g/dL. He subsequently defaulted from follow-up.

He had no chronic illnesses, no known significant family history and was a non-smoker. On examination, he was asthenic and pale. General examination revealed no lymphadenopathy. Cardiorespiratory examination was normal. On abdominal examination, a liver span of 12 cm was noted. Digital rectal examination was negative for any masses and blood. Neurological examination was normal. He was assessed and admitted for inpatient evaluation. During this admission, investigations revealed:

- Hb 3.8 (14–17) g/dL, mean corpuscular volume (MCV) 63 (80–95) fl, white blood cells 15.1 (4–10) x 10^9/L, platelets 1618 (150–400) x 10^9/L, absolute reticulocyte count 19.4 (23–90) x 10^9/L
- Blood film showed hypochromasia, microcytosis, fragmented red blood cells, giant platelets and thrombocytosis

From: Department of Medicine, University Hospital of the West Indies, Kingston 7, Jamaica, West Indies.

Correspondence: Dr R Alfred, 11 Wafe Trace, Ottley Street, Scarborough, Tobago, West Indies. E-mail: rose24_tt@yahoo.com

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- Ferritin level was 2 (32–284) ng/mL, serum iron 56 (31–144) ug/mL, total iron binding capacity (TIBC) 419 (230–450)
- Transferrin saturation was 13% (13–45%)
- Folate was 35 (2.7– 34) ng/mL and vitamin B_{12} was 236 (189–883) pg/mL
- Stool for faecal occult blood was positive and negative for ova, cysts and parasites
- Renal and liver function tests were normal
- Antinuclear antibody and rheumatoid factor were negative
- Immunoglobulin (AGM) levels were normal

Upper gastrointestinal endoscopy revealed cystic fundic glandular polyps (Figure) and duodenal adenomas.

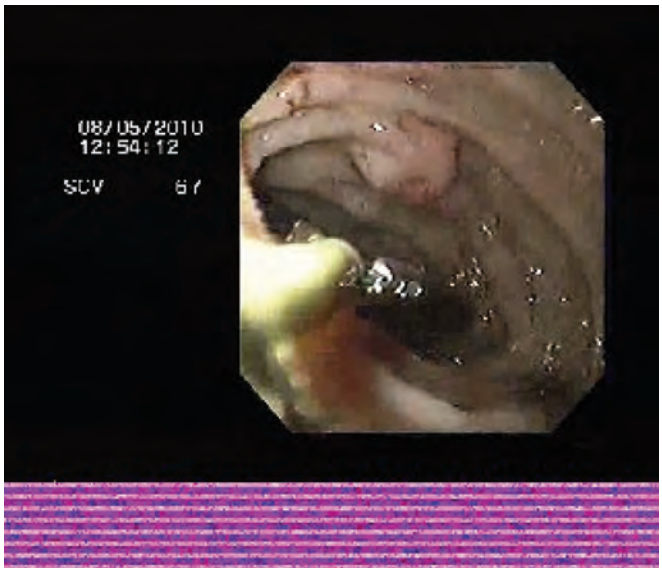

Figure: One of the cystic fundic glandular polyps seen during upper gastrointestinal endoscopy.

Colonoscopy showed over 100 tubular adenomas, the histology of which confirmed familial adenomatous polyposis with low grade dysplasia.

He refused blood products based on religious background; he also refused a colectomy. He was discharged on iron tablets and given a follow-up date to the gastroenterology clinic.

Six months later, he presented with symptoms of intestinal obstruction. An abdominal ultrasound and (multidetector computed tomography) enterography revealed small bowel intussusceptions secondary to a large jejunal polyp which was resected on laparotomy. Once again, histology revealed familial adenomatous polyposis. At that time, his haemoglobin was 4 g/dL. Over the ensuing months, he developed symptoms of congestive cardiac failure secondary to chronic anaemia. He was admitted finally with haemoglobin of 1.8 g/dL. His family requested perfluorocarbon transfusion over packed red blood cells. The former was not available and he died from a myocardial infarction confirmed by electrocardiogram.

DISCUSSION

Familial adenomatous polyposis is an autosomal dominant syndrome that invariably progresses to colon cancer (3). It is characterized by the appearance of hundreds or thousands of adenomatous polyps in the colon, as well as extracolonic tumours of the duodenum, pancreas or thyroid (4).

In Jamaica, there is no FAP registry, so prevalence and incidence data are not available, but a few anecdotal cases have been discovered. In the United States of America (USA), the incidence of FAP is approximately one case per 7500 live births. In approximately 20% of patients with multiple colonic polyps, a family history of the disease is lacking, indicating that a spontaneous mutation of the adenomatous polyposis coli (APC) gene might have occurred (5).

The APC gene is a tumour suppressor gene that is located on band 5q21. It plays a part in metaphase chromosome alignment, and promotes apoptosis in colonic cells, by sequestering the growth stimulatory effects of the β-catenin protein. Adenomatous polyposis coli is considered the gatekeeper of colonic neoplasia. Its mutation/inactivation is the initial step in the development of colorectal cancer in patients with FAP (6).

Clinical management of FAP includes genetic screening. As most families affected by FAP have a mutation in the tumour suppressor APC gene, screening would aid in early intervention and direct endoscopic surveillance of these patients. Familial adenomatous polyposis cases arise *de novo* in 30% of cases, so patients with the phenotype and an absent family history require genetic testing. Direct DNA sequencing identifies 95% of APC mutations (5). This test is accurate, but expensive. Most laboratories would do preliminary protein truncation testing before direct DNA sequencing. Other genetic tests that can identify deletions include Southern blotting, karyotype analysis and fluorescent *in situ* hybridization [FISH] (1).

In 5–30% of cases, no APC gene is identifiable by current genetic testing. In fact, it has been shown that 'APC-negative' FAP patients may carry biallelic mutations in the MYH gene (7). The phenotype of MYH associated polyposis (MAP) is often indistinguishable from FAP or attenuated APC (AAPC), with patients usually having 10–100 polyps, but sometimes more than 100. The age of onset of MAP is usually in patients older than 45 years, and patients often present with colorectal carcinoma at the time of diagnosis. There is usually no family history, given the autosomal recessive inheritance pattern of MAP. Duodenal polyps can be found in up to one-fifth of patients. There is no increased risk of other types of cancers associated with this syndrome (8, 9).

It is generally believed that fundic gland polyps have little or no potential for malignant transformation in the

population at large, and only a few case reports describe the development of high grade dysplasia or gastric adenocarcinoma associated with diffuse fundic gland polyposis in patients with FAP (10). The histology of the fundic polyp for the index case revealed low grade dysplasia, which puts him at low risk for upper gastrointestinal malignancy. Duodenal carcinomas and desmoids tumours may also contribute to mortality (11).

Diagnosis of FAP is based on a suggestive family history, clinical findings and colonoscopy. The clinical diagnosis should be confirmed by genetic testing. When the APC mutation in the family has been identified, genetic testing of all first-degree relatives should be performed. Presymptomatic and prenatal, and even preimplantation genetic testing is possible. Individuals with FAP carry a 100% risk of colorectal cancer; however, this risk is reduced significantly when patients enter a screening-treatment programme (11). Genetic counselling would also be of paramount importance once undertaken (12). Referral to a geneticist or genetic counsellor is usually recommended. Chemoprevention with celecoxib has been advocated for use in patients with FAP as secondary prophylaxis against polyps (13).

Management of FAP is a multidisciplinary approach and would involve the social worker, geneticist, gastroenterologist, medical oncologist, blood banking team, surgeon and pathologist. The management involves the individual's entire family due to the strong hereditary component and the high risk of progression to cancer. Early identification is key in successful management with careful planning of treatment.

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