Best Practice & Research Clinical Gastroenterology 31 (2017) 401–408

Contents lists available at ScienceDirect

Best Practice & Research Clinical Gastroenterology

journal homepage: https://ees.elsevier.com/ybega/default.asp

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Management of small bowel polyps: A literature review

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ARTICLE INFO

Article history:
Received 27 May 2017
Accepted 25 June 2017

Keywords:
Small bowel polyps
Polyps
Small bowel
Capsule endoscopy
Double balloon enteroscopy

ABSTRACT

Despite the small bowel comprising 90% of the mucosal surface area of the gastrointestinal tract, it is a rare site for neoplasia and only accounts for a little over 3% of the tumors that arise in the digestive tract. Benign small bowel lesions include lipomas, lymphangiomas, leiomyomas, neurofibromas, nodular lymphoid hyperplasia and adenomas, many of which are precursors to malignant lesions. Several polyposis syndromes are associated with small bowel polyps as well, including familial adenomatous polyposis syndrome, lynch syndrome, Peutz-Jeghers syndrome, Cowden syndrome and juvenile polyposis syndrome. Our aim was to review non-malignant small bowel polyps and discuss the prevalence, typical location, clinical presentation, diagnosis, endoscopic and histologic description and lastly management of each of these lesions.

1. Background

Despite the small bowel comprising 90% of the mucosal surface area of the gastrointestinal tract, it is a rare site for neoplasia and only accounts for a little over 3% of the tumors that arise in the digestive tract [1]. In the United States, small bowel neoplasms account for approximately 0.6% of all new cancer cases each year [1]. Furthermore, United States has the highest age-adjusted incidence of small bowel tumors in the world, potentially driven by racial differences [2].

Despite modest beginnings, recent studies have shown a steadily increasing incidence of small intestinal neoplasms, which appear to be driven mainly by an increased incidence of carcinoid tumors [2–4]. In a series of 9721 autopsies done in the 1950s, 112 subjects were found to have primary neoplasms (both benign and malignant) of the small intestine, representing a prevalence of 1.15%. In this same series, 40 of those subjects had malignant primary small bowel neoplasms, representing a prevalence of 0.4% [5].

Though their incidence is clearly rising, the true prevalence of small bowel tumors is likely masked by difficulty in their diagnosis. Detection of small intestinal tumors represents a unique clinical challenge given vague and heterogeneous symptoms, as well as limitations in radiographic and endoscopic detection. Because of the low prevalence, diagnostic examination needs to be accurate, with high negative predictive value.

Regardless, detection is hampered by the insidious onset of symptoms, with delayed discovery of disease, which may lead to poor treatment outcomes. In recent years, the detection has improved in the setting of more advanced radiographic and endoscopic approaches to diagnosis. In a small series from 1991, the average delay in diagnosis from the onset of the initial complaint in patients with small intestinal tumors was 6–8 months [6]. Data collected during 2003–2011 from a large study in Japan which utilized more advanced techniques such as deep enteroscopy revealed the median diagnostic delay to be 21 weeks for malignant tumors, 15.5 weeks for benign tumors, and 18.5 weeks for small bowel tumors overall [7]. Unfortunately, despite this, over the last twenty years there was no significant change in long-term survival rates for malignant small bowel neoplasms [3].

2. Epidemiology

The mean age at diagnosis for small bowel neoplasms is 65 years; however, there is a bimodal distribution of presentation, with sarcomas and lymphomas presenting at a younger age (60–62) than adenocarcinomas and carcinoids (67–68) [8,9]. Males are disproportionately affected 1.5 times more than females.

Finally, there is both a higher incidence rate and mortality rate in black populations for both males and females compared to white populations in the United States that is not well explained [2,3,10].

Small intestinal tumors are more common in people with Crohn's disease, celiac disease, familial adenomatous polyposis,

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http://dx.doi.org/10.1016/j.bpg.2017.06.003
1521-6918/

Peutz-Jeghers syndrome, and hereditary non-polyposis colorectal cancer [11–15].

3. Clinical presentation

Small bowel polyps present both variably and insidiously, which often causes a delay in diagnosis by months [6,7]. Many remain asymptomatic, and are found during surgery in patients who present with small bowel obstruction or at autopsy [16]. Symptoms of small intestinal polyps are present in 40–70% of patients and include abdominal pain, iron deficiency anemia or occult blood loss, weight loss, nausea and vomiting, and intermittent obstruction [17–20].

Benign small bowel polyps are more likely to be asymptomatic than malignant neoplasms [21]. When small bowel neoplasms are symptomatic, they are more likely to present with overt gastrointestinal hemorrhage compared to malignant neoplasms [21]. Conversely, malignant small bowel neoplasms are more likely to present with abdominal pain weight loss when compared to benign small bowel neoplasms [21]. Given their variability, however, clinical presentation alone is not sufficient to distinguish between benign and malignant tumors.

Location can also dictate the presenting symptom; proximal lesions in the duodenum can lead to gastric outlet obstruction or jaundice due to the obstruction of the distal common duct (CBD). Intermittent intestinal obstruction, caused by large intraluminal neoplasms or intussusception, can also be a presenting symptom and are frequent in small bowel lipomas [16].

Practice Point

- Small bowel polyps are often asymptomatic and incidentally diagnosed. Conversely they may result in symptoms secondary to iron deficiency anemia, overt bleeding or small bowel obstruction (partial or complete).

4. Initial work-up

There is no standardized diagnostic strategy or sequence to investigation of small bowel polyps, and multiple modalities (radiographic or endoscopic) may be required. Computer tomography (CT) imaging is 80% sensitive for small bowel tumors [22], with newer imaging techniques such as CT enterography and MR enteroclysis/enterography portending improved sensitivities of 85–97% [23,24]. It is important to differentiate MR enteroclysis from enterography; MR enterography involves administration of distending contrast per os, and MR enteroclysis involves contrast administration via nasoenteric tube, which is less well tolerated and less widely available. Specifically for carcinoid tumors, somatostatin receptor scintigraphy, commercially known as Octreoscan, is 88% sensitive and 97% specific, and has the added bonus of the ability to detect distant metastases [25].

An endoscopic approach is often favored given the ability to both visualize and sample the lesions. If a proximal tumor is suspected, such as in the case of obstructive jaundice or upper gastrointestinal tract obstructive symptoms, upper endoscopy can be pursued first and has been shown to have 59% sensitivity in early studies [21]. Push enteroscopy can evaluate lesions up to the proximal jejunum. Finally, colonoscopy permits evaluation of the terminal ileum, and along with endoscopy is the initial evaluation in various small bowel neoplasm presentations such as obscure GI bleeding, iron deficiency anemia, and weight loss.

Lesions located between the proximal small bowel and terminal ileum were previously a diagnostic challenge prior to the advent of video capsule endoscopy and balloon enteroscopy.

Video capsule endoscopy (VCE) is the preferred noninvasive method for diagnosis of obscure small bowel bleeding and has a high diagnostic yield for small bowel neoplasms; diagnostic yield for epithelial and sub epithelial polyps equal to or smaller than 10 mm was 75% and 83%, respectively. For small bowel polyps greater than 1 cm, diagnostic yield for epithelial and subepithelial lesions was 91% and 78%, respectively [26].

Small bowel neoplasms can present as ulcerated lesions on capsule endoscopy, especially in adenocarcinomas or submucosal neoplasms such as GIST or carcinoids. The miss rate for ulcerated lesions on VCE is 0.5%, compared to 78.7% in the comparison method, with a miss rate of 18.9% for small bowel neoplasms, which was lower than the 63.2% miss rate for the comparison method [27]. Polypoid lesions are also easily detected on VCE, and they are a good choice for surveillance in patients with Peutz-Jeghers syndrome and Familial Adenomatous Polyposis syndrome [28]. VCE should be avoided if small bowel obstruction is suspected.

Double and single-balloon enteroscopy (SBE) are more labor-intensive, but enable visualization, sampling, and potential intervention. Diagnostic yield in double-balloon enteroscopy (DBE) for epithelial and sub epithelial polyps equal to or smaller than 10 mm was 100% and 97%, respectively. For small bowel polyps greater than 1 cm, diagnostic yield for epithelial and subepithelial lesions was 98% and 94%, respectively [26]. Performance of SBE and DBE appear to be similar in terms of diagnostic and therapeutic yield [29]. Given that capsule endoscopy is less invasive, it is often pursued first, with capsule-guided enteroscopy following.

Practice points

- Although cross sectional imaging may diagnose small bowel polyps, endoscopic diagnosis is ideal because it allows for direct visualization and diagnostic capability.
- Video capsule endoscopy is the preferred non-invasive method to evaluate the small bowel, but if a concerning lesion is identified, it should be further evaluated with small bowel enteroscopy to allow for biopsy of the lesion.

5. Benign small bowel polyps

5.1. Lipoma

Small bowel lipomas are usually incidentally identified during endoscopic evaluation, making up for 2.6–15% of all benign small bowel tumors [30,31], the third most common benign small bowel tumor [16]. Lipomas are typically found in the colon, but may also be found in the small intestine, particularly the ileum (50%), less so in the duodenum (25%) and jejunum (25%) [31]. They are benign, non-epithelial cell tumors of mesenchymal origin, that do not typically cause symptoms unless larger than 2 cm in size [32]. Often found as single lesions, they are slow growing. Endoscopically, lipomas appear to be typically round, smooth protrusions into the lumen, often yellow in color, and submucosal in origin given the normal appearing overlying mucosa. Lipomas display a characteristic endoscopic sign known as the “pillow sign” in which a biopsy