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Original Article

Pyogenic granuloma of the gastrointestinal tract

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Abstract

Introduction: Pyogenic granuloma (PG) or granuloma pyogenicum is essentially a capillary hemangioma on the skin or a mucosal surface which shows an exophytic growth pattern and has a lobulated appearance. The most common sites are skin (40%) and mucosal surfaces (predominantly oral cavity, 60%). We intend to report all available cases of PG of gastrointestinal (GI) tract, diagnosed at the Henry Ford hospital, a tertiary referral center. **Patients and Methods:** A retrospective review of pathological database was performed on all GI biopsies in the last 10 years using diagnostic codes and pathology codes searching for PG of the GI tract. **Results:** A total of 23 cases of pathologically diagnosed PG was diagnosed over a 10 year period. The median age of patients was 64 with almost equal gender distribution (47.8% were males, and 52.2% were females). The most common location of PG was sigmoid colon (65.2%), esophagus (17.4%) and transverse colon (13%). PG presented as a polyp in 16 patients (69.6%). The most common indication for endoscopy in these cases was screening colonoscopy (30.4% cases). **Discussion:** PG of GI tract is rare. To date, only about 15–20 cases have been reported in the literature and most cases have been reported from Japan and Korea. This is the largest case series of this rare pathological lesion of the GI tract. Most cases of PG were diagnosed on an endoscopy done for an unrelated reason in our series. Hence, most cases were asymptomatic, unlike previously reported cases which were mostly associated with GI bleeding.

Key words Capillary hemangioma, gastrointestinal tract, Pyogenic granuloma,

Introduction

Pyogenic granuloma (PG) or granuloma pyogenicum is a type of inflammatory hyperplasia.[1] The term PG is nonspecific and represents a large number of nodular growths most commonly found on the skin. It is extremely rare in gastrointestinal (GI) tract except oral cavity.[2] There are two pathological types of PG described in the literature – lobular capillary hemangioma (LCH) and non-LCH.[3] The term PG is a misnomer because neither it contains pus, nor it is strictly a granuloma.[4] Approximately 33% develop after a minor trauma. Granuloma gravidarum is a specialized form of PG that occurs on the gingival surfaces of pregnant women.[4]

Oral PG is predominant in the second decade of life and especially in females, likely related to estrogen effects.[5] PG generally presents as a small, erythematous papule on a pedunculated or sometimes sessile base with a characteristic ulcerated and friable surface. Microscopically, PG shows highly vascular proliferation that resembles granulation tissue with small and large blood vessels. They are covered with benign, flattened epithelium with an epidermal collarette at the base of the lesion. The stroma is edematous and Fibro myxoid with an orderly proliferation of a central large and peripheral small capillaries. Lining endothelial cells may be mitotically active and there usually is a mixed inflammatory infiltrate in the background.

There are only scattered case reports of PG in the literature since it is very uncommon in the GI tract. The exact clinical significance of PG in GI tract is unknown.

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The main objective of our study was to report all available cases of PG of the GI tract at our institution, which is an extremely rare condition and has not been described in sufficient detail in the literature and to assess its clinical significance.

Patients and Methods

A retrospective review of pathological database was performed on all GI biopsies from January 2000 to December 2011 using diagnostic codes and pathology codes searching for PG of the GI tract. Inclusion criteria were all cases of pathologically diagnosed PG from biopsies performed during all GI endoscopies including the esophagogastroduodenoscopy, colonoscopy, push enteroscopy, and double barrel endoscopies. Exclusion criteria were limited only to cases where complete information was not available. Demographic, clinical, endoscopic, and associated features were studied. The study was approved by the institutional review board of the hospital.

Results

A total of 23 cases of pathologically diagnosed PG was diagnosed over a 10 year period. The median age of patients was 64 with almost equal gender distribution (47.8% were males, and 52.2% were females). The majority of patients were Caucasians (65.2%), followed by African Americans (30%) and others (4.3%). The most common location of PG was sigmoid colon-14 patients (65.2%), followed by esophagus-4 patients (17.4%), transverse colon-3 patients (13%), splenic flexure-1 patient (4.3%) and rectum-1 patient (4.3%).

Pyogenic granuloma presented as a polyp in 16 patients (69.6%) and as reddish inflamed edematous mucosa in seven patients (29.4%). The polyp form was sessile in most cases-13 patients (81.3%) and pedunculated in the rest-3 patients (18.7%). The size of the polyp was equally distributed between <1 cm and >1 cm (eight cases each).

Endoscopically, most lesions appeared as highly vascular, inflammatory pseudo polyps without any features suggestive of the adenoma. The most common descriptions from endoscopic reports were–"small reddish inflamed appearing polyp," "nonulcerated, nonbleeding, benign appearing polyp," "diffuse reddish inflammed mucosa." None of the lesions showed features like friability, ulceration or induration suggestive of malignancy. There were no endoscopic reports of lesion being described as malignant or adenomatous by experienced endoscopists. PG presenting as polyp was completely excised using cold snare polypectomy in most cases except rare instances due to technical difficulties. The most common indication for endoscopy was screening colonoscopy (30.4% cases). A family history of colon cancer or polyp in a first-degree relative was found in five cases (21.8%). A personal history of adenoma in the past was found in four cases (17.4%) and colorectal cancer in three cases (13%). Other indications for endoscopy were melena (four cases), iron deficiency anemia (two cases) and acute flare of ulcerative colitis (one case). When PG was found in the mucosa without a polyp, there was associated mucosal inflammation including Barrett's metaplasia and ulcerative colitis, but no evidence of dysplasia or adenocarcinoma was found coexisting with PG. A coexisting polyp was found during endoscopy in four cases–Hyperplastic in one and adenoma in three cases. One patient had PG developing in postoperative biopsy specimen resected for rectal adenocarcinoma. One patient had PG developing adjacent to ileocolonic anastomosis after right colectomy done for adenocarcinoma. Post polypectomy bleeding was found in only one patient, and it was easily controlled with epinephrine application. In four cases, polyp could not be completely removed due to location or size; and was either biopsied or removed piecemeal, but there were no reports of recurrence at the same site or development into adenoma or carcinoma.

Discussion

Pyogenic granuloma of the GI tract is rare. On extensive review of the literature, we found only 17 previously reported cases mostly from Japan and Korea. We found a total of 23 cases of PG from our pathological specimens of GI biopsies over the last 11 years. Our large volume center performs over 20,000 endoscopies/year. This means that the incidence of PG is extremely low (approximately 1 in 10,000 endoscopies) considering the large number of endoscopies and biopsies performed at our tertiary care center.

Most cases of PG were diagnosed on an endoscopy done for an unrelated reason in our series. None of the patients presented with features suggestive of malignancy like abdominal pain, change in bowel habits, weakness, or weight loss. Even in patients who presented with melena or iron deficiency anemia, an alternate etiology for blood loss was found. Hence, most cases were asymptomatic, unlike previously reported cases which were associated with GI bleeding. There was a case report of GI bleeding which required 99 mTc-labeled red blood cells scintigraphy for the diagnosis and surgical resection of an ileal PG.[6] Another case report included PG of distal esophagus causing melena which was treated by local excision and laser photocoagulation.[7] PG is generally small in size and most cases in our series were <1.5 cm, largest one being 2.5 cm. However, the largest PG that has been reported was 3 cm in gastric fundus causing melena and required embolization of feeding the vessel followed by endoscopic resection without any complications.[8] The most common location in our series is the sigmoid colon, and these lesions were mostly picked up on screening colonoscopy. However, there have been reports of PG of sigmoid colon causing rectal bleeding and requiring endoscopic resection[9] or causing constipation, treated with argon plasma coagulation treatment. There

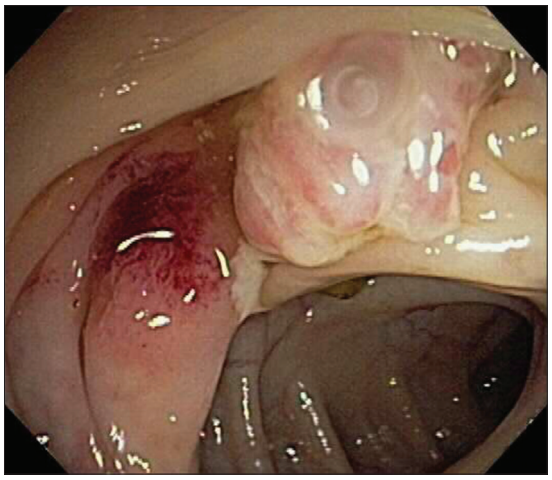

Figure 1: Colon polyp with benign appearance on colonoscopy, found to be pyogenic granuloma on pathology

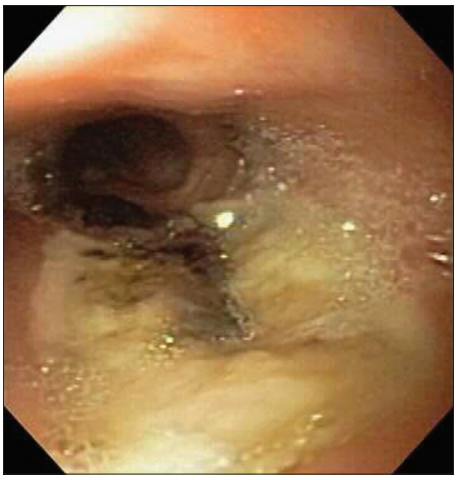

Figure 2: Esophageal ulcer, biopsy revealed pyogenic granuloma

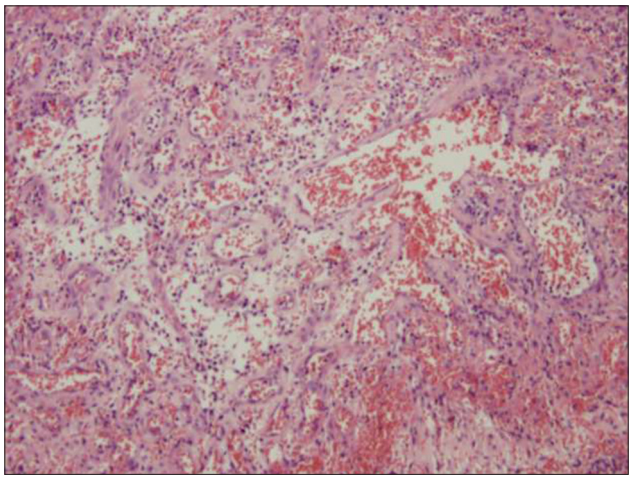

Figure 3: Vascular proliferation resembling granulation tissue in pyogenic granuloma

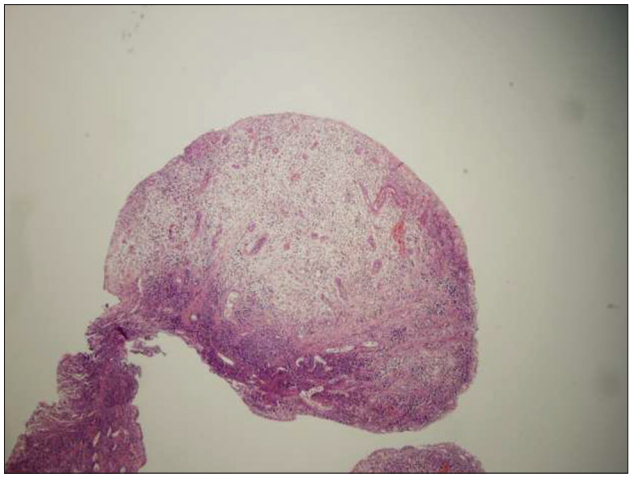

Figure 4: Mixed inflammatory infiltrate in pyogenic granuloma

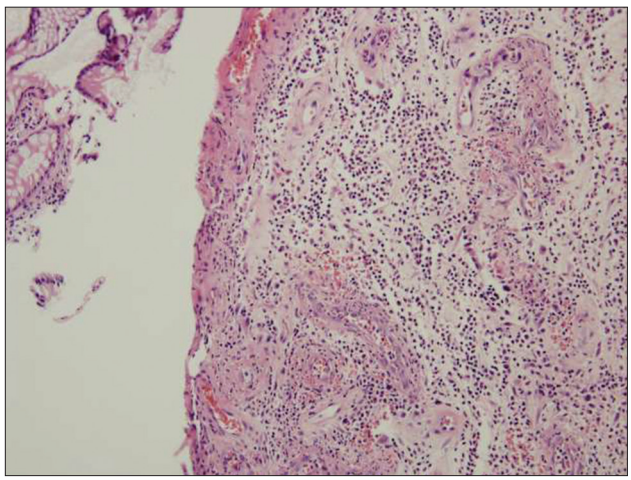

Figure 5: Benign flattened epithelium and edematous stroma

was an exceptional case of multiple PG detected by single photon emission computed tomography using 99 Tcm in a 73-year-old man with 2 year history of intermittent lower GI bleed who was found to have disseminated PG involving skull, abdominal wall, intestine, scrotum, and right leg.[10]

It is unclear why most reported cases from Japan and Korea presented with GI bleeding while all cases in our series were asymptomatic incidental findings. Furthermore, we did not find a clear association or coexistence between PG and malignancy. However, given the small retrospective and descriptive nature of our study, it is hard to draw a firm conclusion regarding the malignant potential of PG. The definitive evidence can only come from either a larger retrospective analysis or a prospective trial comparing PG with other mucosal lesions with malignant potential. However, given the extremely rare nature of this lesion, such studies will probably neither be performed nor needed. That being said, PG has never been linked to malignancy in locations other than the GI tract like skin and mucosa where it is commonly found and considered a benign lesion.

With advancements in endoscopic procedures and ease of excision in most cases, we definitely recommend excision when possible, or at least biopsy to confirm the pathological

diagnosis as there are no clear endoscopic features to diagnose PG. Surgical excision was never required in any case in our series, or other reported cases, however, large lesions had to be removed piecemeal although were removed in a single session and did not require multiple endoscopies.

Figures 1-5 are illustrative of gross and pathological features of PG.

Summary

Pyogenic granuloma is a rare pathological lesion in the GI tract except mouth and is mostly an incidental finding on an endoscopy performed for unrelated reasons but can cause life-threatening bleeding. It is easily removable in most cases and does not have any known malignant potential.

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