CASE STUDIES

Colostomy site pulse granuloma: A case report and review of literature

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Abstract

Pulse granuloma is a benign condition characterized by foreign body reaction to vegetable matter like seeds of leguminous plants. We report a unique case of pulse granuloma at an extra-oral location, colostomy site. Microscopic examination revealed a granulomatous reaction in response to vegetable matter characterized by irregularly sized oval hyaline structures with central basophilic granules. To the best of our knowledge, this is the first reported case of a pulse granuloma at the colostomy site. Awareness and familiarity of this entity helps in avoiding an erroneous diagnosis of systemic inflammatory disease or infectious disease.

Introduction

Pulse granuloma is a benign condition characterized by foreign body reaction to ingested vegetable matter, especially edible seeds of leguminous plants. The condition is predominantly reported in the oral cavity, with very rare extra-oral presentation. The extra-oral locations reported in the literature are lung, peridiverticulum, gallbladder, fallopian tube, peritoneum, skin, appendix, and rectum.[1-5] To the best of our knowledge, this is the first reported case of pulse granuloma at the colostomy site.

Case report

A 72-year-old South Indian male patient presented with abdominal pain, weight loss, and melena. Colonoscopy revealed an obstructive growth in the sigmoid colon. The result of colonoscopic biopsy confirmed the disease as colonic adenocarcinoma. A loop colostomy was further carried out due to the occurrence of edema. The patient had undergone anterior resection after 4 weeks of diagnosing the malignancy.

The pathological examination of the colon specimen revealed an infiltrating moderately differentiated tumor in the sigmoid colon. The colostomy site showed a grey white nodule measuring around 1 cm. Cut section of the nodule showed a foreign body granulomatous reaction in response to vegetable matter (Figure 1). The vegetable content showed irregularly sized oval hyaline structures with central basophilic granules. The vegetable matter was positive for periodic Schiff base (PAS) and alcian blue (Figure 2). With histopathological and special stains findings, a final diagnosis of pulse granuloma was made after ruling out granulomatous inflammatory diseases and systemic inflammatory diseases.

Discussion

Pulse granulomas are inflammatory reaction marked by the presence of acute, chronic inflammatory cell infiltrate and multinucleated giant cells evoked in response to vegetable matter, especially leguminous plants like peas and lentils.[6] Pulse granulomas are characterized by faintly eosinophilic hyaline rings. Hence they are also called as hyaline ring vasculopathy.[6, 7] Two theories, namely exogenous and endogenous theories, have been proposed to explain the pathophysiology of pulse granuloma.[6] Exogenous theory suggests pulse granuloma as an unusual inflammatory reaction to the penetration of vegetable matter into human tissue. The hyaline rings are considered to originate from indigestible cellulose material of leguminous material, in contrast to the readily digestible starch moiety of plant foods. However, according to endogenous theory, hyaline rings are formed due to degenerative changes in blood vessel wall or fibrosed extravasated serum proteins.[6] Based on the experimental evidence from animal studies, the exogenous origin is considered as the better accepted model for pulse granuloma.[3, 8]

Inflammatory reaction along with giant cells in the gastrointestinal tract may stimulate a systemic inflammatory disease like Crohn's disease or sarcoidosis.

Fig 1: Pulse granuloma showing foreign body granulomatous reaction to round to oval vegetable matter with central basophilic granules (hematoxylin and eosin, 40X)

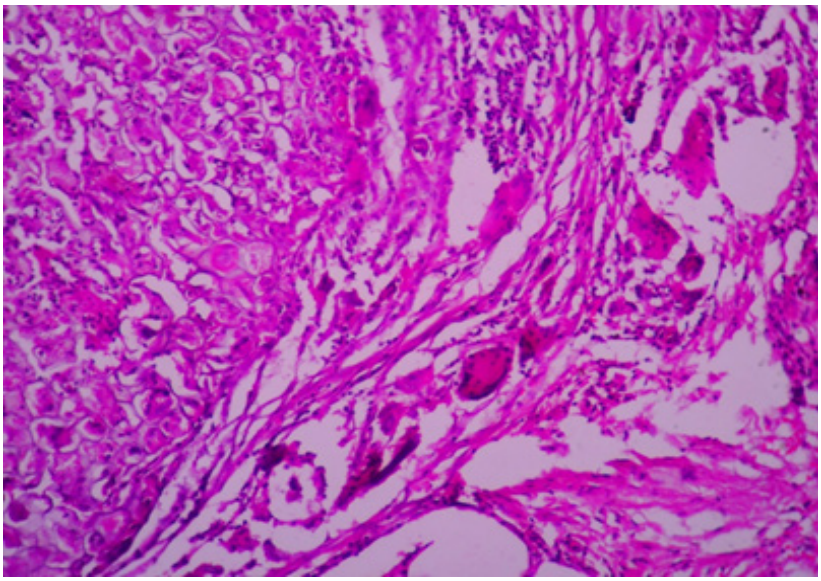
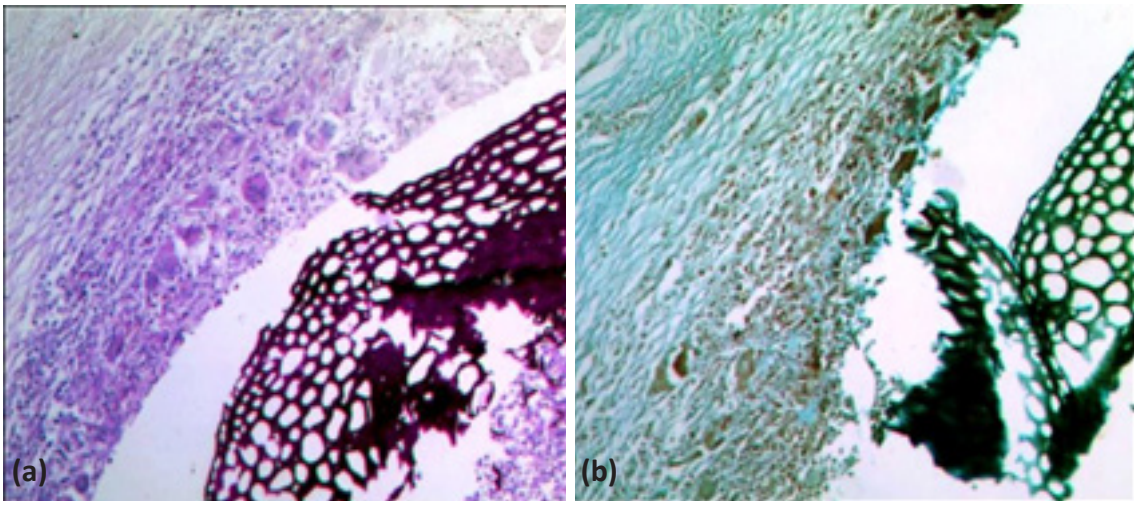


Fig 2: Photograph showing vegetable matter (a) demonstrating PAS positivity (PAS, 10X) (b) demonstrating alcian blue positivity (10X)



Careful screening for pathognomonic histologic features like crypt abscess, cryptitis, transmural inflammation along with granulomas, and naked granulomas with asteroid bodies are helpful to rule out these diseases. Differential diagnosis in the present case also included granulomatous inflammation caused by inflammatory agents. However, Ziehl-Neelsen negative staining and the absence of identifiable fungal organisms in PAS staining ruled out granulomatous inflammation due to tuberculosis and fungal infections. Additionally, absence of discernible nucleus and morphological non-conformity to any of the known parasites excluded the possibility of parasite-induced granulomatous reaction. The oval shaped hyaline structures of variable size observed in the present case study was different from the uniform, small rounder crystalline structures seen in glove powder-induced granulomatous reaction.[4]

Literature evidence indicates that pulse granuloma at the colostomy site has not been described previously. The obstruction and erosion at the colostomy site could be the probable reason for the penetration and implantation of the vegetable material into the colonic mucosa to evoke a granulomatous reaction. Familiarity with the morphologic

features of pulse granuloma may facilitate the identification of pulse granuloma at rare extra-oral locations, thereby to avoid erroneous diagnosis and treatment.

Competing interests
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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