Peutz-Jeghers Syndrome: A Circumventable Emergency
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Abstract
Peutz-Jeghers syndrome (PJS) is characterized by multiple hamartomatous polyps in the gastrointestinal tract and mucocutaneous pigmentation. Here we present, a case of multiple gastrointestinal hamartomatous polyps in a 22-year-old male who had been operated for intestinal obstruction due to ileocolic intussusception. Resection of the affected segment was done with proximal ileostomy and distal mucous fistula formation. Clinicopathological diagnosis of PJS was made. Later, during ileostomy closure, it was found that the patient had a transverse colonic mass which was resected. Histological examination with immunohistochemistry confirmed it to be a Mucosa-Associated Lymphoid Tissue Lymphoma (MALToma). Colonic MALToma in the background of PJS is a unique case for which it has been reported.

Key Words: Colonic Mucosa-Associated Lymphoid Tissue Lymphoma, intussusception, Peutz–Jeghers syndrome

Introduction
Peutz–Jeghers syndrome (PJS) is characterized by intestinal hamartomatous polyps associated with a distinct pattern of skin and mucosal macular melanin deposition. Characteristic mucocutaneous macules are observed in 95% of cases around mouth, nostrils, buccal cavity, and hand.[1,2] Polyps found in PJS commonly present in early adulthood. One-third of the affected individuals experience symptoms during the first 10 years of life. The most common symptom is an intermittent abdominal pain. Patients with PJS have a 15-fold increased risk of developing intestinal cancer compared to the general population.[3] Although PJS is associated with many gastrointestinal and extraintestinal malignancies, lymphoid malignancy in the colon is extremely rare. The treatment of Mucosa-Associated Lymphoid Tissue Lymphoma (MALToma) of colon is not well recognized, but surgical resection has been proposed as was done in our case.

Case Report
A 22-year-old male patient was referred to us for evaluation of multiple pigmented lesions over his mouth, present since childhood. Since the age of 9 year, there was a history of occasional hematochezia. However, there was no history of melena. The parents had taken him to a local physician, and the condition was managed with antihelminthic drugs, but the problem used to recur. There was no history of weight loss or any other systemic complaints. Five days back, he had presented to the general emergency with complaints of nonpassage of stool and flatus, pain, and distension of abdomen and vomiting. He had tachycardia, tachypnea, dehydration, hypotension, and distended rigid abdomen. Per rectal examination revealed empty rectum with blood mixed mucus. Straight X-ray abdomen showed dilated bowel loops, multiple air-fluid levels, and the absence of gas in colon and rectum [Figure 1].

Diagnosis of small bowel obstruction was made, and the patient was resuscitated. Hematological profiles and serum electrolytes were within the normal limits. Exploratory laparotomy was done. On exploration, ileocecal intussusception was found with a short segment of gangrenous ileum which was managed with limited ileocecal resection [Figure 2]. Numerous polyps were found along the whole length of the small and large gut. Proximal ileostomy with distal mucous fistula was made. A polyp was found to be the...
apex of the intussusception, which was histologically found to be a hamartomatous polyp [Figure 3].

During follow-up, upper gastrointestinal endoscopy and colonoscopy were done which revealed the presence of polyps from the gastric fundus to the rectum. Biopsy from those polyps confirmed a hamartomatous pathology [Figure 3]. Besides, detailed cutaneous examination revealed melanotic mucocutaneous macules in the lips and buccal mucosa [Figures 4 and 5]. As per the patient, one of his two younger brothers had similar lesions over the lips, but he was not available for examination. There was no history of hematochezia, melena, or weight loss among the siblings or any other family member.

After 5 months of the first surgery, the patient was reoperated for taking down of ileostoma. During operation, colocolic intussusception was found in the transverse colon with a large mass palpable inside. This colocolic intussusception was resected with ileotransverse anastomosis. Postoperative period was uneventful, and the patient was discharged after 6 days. Histopathology of the mass showed expansion of the marginal zone of the lymphoid tissue along with sheets of heterogeneous population of small lymphocytes, suggestive of MALToma [Figure 6]. Immunohistochemistry showed CD20 positivity. Both proximal and distal margins were negative for malignant cells.

After 1-year follow-up, the patient was asymptomatic. Colonoscopy revealed few pedunculated polyps in the rectum and sigmoid colon, but the surface was smooth. Yearly colonoscopy follow-up was planned to detect early malignant changes.

**Discussion**

Peutz–Jeghers syndrome (PJS) is an autosomal dominant disorder due to mutation of STK11 gene on chromosome 19p which codes for serine-threonine kinase. Clinically, it presents with hundreds of hamartomatous polyps in the gastrointestinal tract along with mucocutaneous involvement characterized by hyperpigmented macules on the buccal mucosa, lips, periorbital area, nose, back of the hands and tips of fingers and toes, and rarely over palms and soles. These mucocutaneous lesions appear in infancy and early childhood and generally disappear postpuberty with the oral lesions persisting lifelong.
The clinicopathological criteria of the World Health Organisation for diagnosing PJS are as follows: (4) (any one criteria is sufficient for the diagnosis of PJS)
1. Three or more polyps, with histological features of PJS
2. A family history of PJS with any number of polyps
3. A family history of PJS with characteristic mucocutaneous pigmentation
4. Characteristic mucocutaneous pigmentation with any number of polyps.

The hamartomatous polyps most commonly occur in the small intestine (78%) followed by colon (42%), stomach (38%), and rectum (28%). Maximum number is found in jejunum followed by ileum and least in the duodenum. (5) They may occur at any other part of the gastrointestinal tract or even outside the gut, like renal pelvis, urinary bladder, ureters, lungs, nares, and gallbladder. (4) Rarely, polyps may be adenomatous which might create confusion with familial adenomatous polyposis syndrome. (5) There is an increased risk of intestinal and nonintestinal malignancies associated with PJS. (3) Colorectal cancer is the most common among the gastrointestinal malignancies. Gastric and pancreatic cancers are less common than colorectal. (5) Extraintestinal malignancies include cancer of the breast, ovary, cervix, fallopian tube, thyroid, lung, gallbladder, bile duct, pancreas, and testis. (6)

The polyps are generally benign but can lead to an emergency situation due to a small bowel obstruction (intussusception being the most common cause), rectal prolapse and excessive hemorrhage leading to anemia and heart failure. The more common types of intussusception are jejunojejunal, jejunoleal, ileoileal, ileocecal and rarely duodenojejunal-jejunal type. (7, 9) The patient generally presents to the emergency with features of acute abdomen, i.e., pain, constipation/obstipation, nausea, vomiting, abdominal distention, tachycardia, tachypnea, and hypotension. After the initial resuscitation, emergency X-ray abdomen and if possible, computed tomography (CT) abdomen is advisable. Following confirmation, exploratory laparotomy should be done.

An early suspicion, detection and proper surveillance of PJS can reduce the incidence of this dramatic and at times, fatal outcome. The patients generally present with hyperpigmented macules at around 5 year of age and positive family history of PJS can be elicited. In most cases, the other features of PJS are not evident at this age. If an early diagnosis can be established at this age and surveillance done according to the guidelines (Table 1) (5) mentioned below, there are two advantages. First, early detection of any complication and malignancy would be possible. Second, an elective surgery can be planned for prophylactic polypectomy such as double balloon enteroscopy and intraoperative enteroscopy. The opinion of the house is divided regarding the treatment of polyps. Some consider these polyps as premalignant lesions, which should be removed without delay, by surgery or endoscopy. However, others state that the rate of malignant transformation in these polyps are very low, so periodic endoscopic surveillance is sufficient. (5)

The polyps in PJS are hamartomatous which are histologically characterized by interdigitating smooth muscle bundles in a characteristic arborizing (branching tree) appearance throughout the polyp. (8) In a recent case report, the patient presented with intussusception and the polyps turned out to be adenocarcinoma. (9) The polyps in our case revealed to be a MALToma which is considered to be an extranodal marginal zone B-cell lymphoma. This is very rare and perhaps the third reported case of MALToma in a patient of PJS. (10)

Recently, a case of intestinal MALToma with coexistent tuberculosis and Peutz-Jeghers polyp has been reported, where the patient had presented to the emergency with...
features of small bowel obstruction.\textsuperscript{(11)} This emphasizes the need of a thorough clinical and laboratory workup to exclude the underlying etiology, at times multiple.

There are numerous screening tests such as barium enterography, wireless capsule endoscopy, CT/magnetic resonance imaging enteroclysis with oral contrast, double contrast CT colonography to screen gastrointestinal polyps,\textsuperscript{(9)} but these are expensive and cumbersome for a child with a family history of PJS right from birth. Hence, an annual dermatology referral since birth until the development of mucocutaneous melanosis in a patient with family history of PJS seems an inexpensive first-line screening modality, and this can also determine the time from when the screening for polyps can be started.

\textbf{Declaration of patient consent}

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

\textbf{Conflicts of interest}

There are no conflicts of interest.

\begin{table}[h]
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\begin{tabular}{|l|l|}
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\textbf{Site for surveillance} & \textbf{Method} \\
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Small intestine & Capsule endoscopy (from 8 year of age and repeated every 3 years) \\
Large intestine & Colonoscopy (from 8 year of age and repeated every 3 years) \\
Stomach & Upper gastrointestinal endoscopy (from 8 year of age and repeated every 3 years) \\
Pancreas & CA-19-9, MRI-MRCP, endoscopic ultrasound (from 25 year and repeated every 1-2 years) \\
Testis & Ultrasound if abnormal on palpation (from birth and repeated every year) \\
Ovary & Transvaginal ultrasound and CA-125 (from 18 year and repeated every year) \\
Breast & Self-examination (from 18 year and repeated monthly), MRI (above 25 year and repeated every year) \\
Cervix and uterus & Pelvic examination and pap smear (from 18 year and repeated every year) \\
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\end{tabular}
\caption{Surveillance protocol in Peutz-Jeghers syndrome}
\end{table}

\textbf{What is new?}

- Although PJS is associated with many gastrointestinal and extra intestinal malignancies, lymphoid malignancy in colon is rare. Our report describes an uncommon finding of colonic Mucosa Associated Lymphoid Tissue Lymphoma in the background of PJS.

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