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Research Article

A histopathological study of 23 cases of benign epithelial polyps of intestine

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Abstract

Background: Intestinal polyps of the colon and rectum consist of hyperplastic polyps, adenomas and mixed polyps. The aim is to study the benign intestinal polyps histopathologically and classify them into specific groups, frequency of each subgroup and their sex and age incidence. Here aim is also to find their premalignant potential.

Methods: It is a retrospective pathological study of 23 cases of intestinal polyps which included 16 resected intestinal specimens and 7 polypectomies. Haematoxylin and eosin stained paraffin sections were studied microscopically and categorised under WHO classification with special note to their malignant potential.

Results: The present study was done with 23 cases of benign polyps of the intestine during the period 2011-2013. Juvenile polyps constituted 52% of polyps followed by equal incidence of villous, tubular and tubulovillous adenomas - each 8.6%. Hyperplastic polyps, pseudopolyps (Crohn's disease), inflammatory fibroid polyp and ectopic pancreas were the least common group with equal incidence (4.3%). In the age group 0-9 years (47.8%) the juvenile polyps were seen. The oldest patient was 73 years. The male to female ratio was 16:7. Tubular and tubulovillous adenomas showed malignant change with age incidence 52 and 73 years respectively. Rectum was the most common site of polyps (39%). In each case of Peutz Jeghers syndrome and Familial adenomatous polyposis, polyps were multiple.

Conclusion: Juvenile polyps the most common type, found commonly in rectum and in the age group of 0-9 years. Familial Adenomatous Polyposis and PeutzJeghers polyps are not uncommon since they were diagnosed in this study of small number of cases. The incidence of malignancy in polyps is 9%. Malignant potential is seen in tubular and tubulovillous polyps. Ectopic pancreas can present as a polyp.

Keywords: intestine, benign polyps, subtype, malignant potential

1. Introduction

A gastrointestinal (GI) polyp is a discrete soft-tissue mass protruding into the lumen.[1,2] Colorectal polyps are common with the majority being epithelial polyps consisting of adenomatous and hyperplastic polyps. The other less common polyps are nonepithelial polyps consisting of inflammatory, and hamartomatous (Juvenile and Peutz-Jeghers) polyps.[1,3]

Pathologists usually receive specimens in the form of biopsies or endoscopic polypectomies. The pathologist's role is to establish a diagnosis, and categorize them into the type of polyp and to determine whether the lesion has been adequately excised. The clinical management depends on the pathology report. It is important to note that a biopsy of a polypoid lesion is similar to examining the "tip of the iceberg". Awareness of the endoscopic appearance of the polyp prior to making any final decision regarding the nature of the lesion is of great importance.[4]

2. Materials and Methods

This is a retrospective pathological study of two years from May 2011 to April 2013. All the pathology reports with the diagnosis of non-malignant colorectal polyps including epithelial and non-epithelial polyps as well as polyposis cases were included in the study. All the demographic findings such as age, gender, location and the type of the polyps were obtained from the pathology reports. The surgical specimens were allowed to fix in 10% formalin for 24-48 hours. The tissue bits from representative areas were taken for histopathological examination and paraffin blocks were prepared. Five micron thick sections were cut and stained with the routine haematoxylin and eosin stain, studied microscopically and categorised under WHO classification with special note to their malignant potential.

3. Results

During the study period 23 cases of benign polyps of the intestine were identified. Out of 23 patients, sixteen were male and seven were female with a male:female ratio of 2:1. The age range varied from 1 year to 73 years old. The most common site of the polyps was rectum (39%). The clinical presentations were dependent on type of polyp like pain abdomen and mass per rectum. Majority presented with bleeding per rectum.

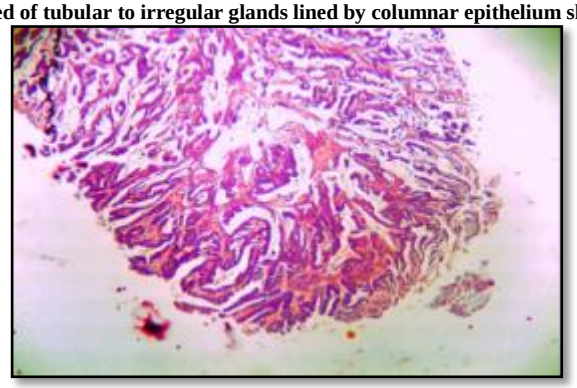
In this study, each polyp is considered as a separate case. There were 12 cases of juvenile polyps of which five were male and seven were females and age ranging from 1year to 17 years old. Polypectomy specimens were from rectum (7 cases), sigmoid colon (2cases), colon (2 cases) one case from colorectal. Grossly, the sizes of the polyps ranged from 0.3 cm to 2.0 cm and cut surfaces were solid, smooth and brownish in colour with multiple cystic spaces. Both sessile as well as pedunculated polyps were found.Microscopically, the polyp was seen as a well-circumscribed mass with prominent stroma and a mixed inflammatory infiltrate showing bands of smooth muscle in association with mucosal blood vessels. Dilated cysts are seen within the polyp lined by mature epithelium appropriate for the site of origin. (Figure 1)

Figure 1: Juvenile polyp showing dilated cysts within the polyp lined by mature epithelium, with prominent stroma and a mixed inflammatory infiltrate showing bands of smooth muscle. (H&Ex10)

There were two cases of villous adenomas presenting as rectal polyps in males aged 55 and 68 years respectively. Grossly, the polyps were seen as irregular and polypoidal mass in the rectum with size measuring 0.2cm. Microscopy showed villi like projection lined by columnar cells in places showing stratification and glands with lining cells showing mild to moderate dysplasia. The fibrovascular core showed congested blood vessels and acute over chronic inflammatory cells.

Two cases of tubular adenomas were identified, both were males aged 48 and 52 years respectively. Both patients presented clinically with abdominal pain and altered bowel habits with blood and mucus in stool. One case in the sigmoid colon had malignant potential. The other was in transverse colon. Microscopy of the sigmoid colon tubular adenoma showed colonic mucosa with a sessile polyp composed of tubular to irregular glands lined by columnar epithelium showing stratification and having pleomorphic hyperchromatic nuclei. (Figure 2)

Figure 2: Tubular polyp composed of tubular to irregular glands lined by columnar epithelium showing stratification (H&E x10)

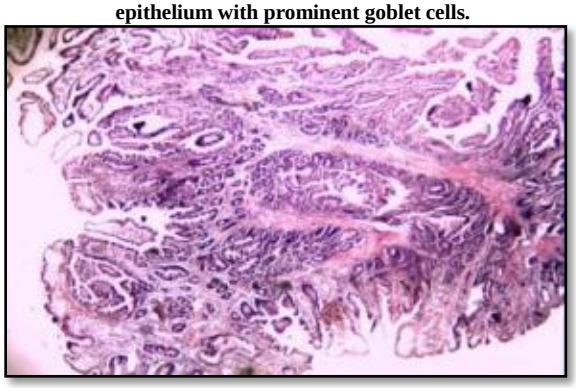


There were two cases of tubulovillous adenomas both in males with age ranging from 30 years to 73 years who presented with bleeding per rectum. On gross examination, the thirty year old male had multiple small polyps from sigmoid colon to ceacum. On microscopy, one of the cases had malignant potential with microscopy showing finger like villi from mucosa and above the muscularis mucosa lined by epithelial cells showing pleomorphic hyperchromatic nuclei.

Only one case was hyperplastic polyp was seen in a male patient aged 64 years who presented with pain abdomen. The polyp was situated in the sigmoid colon measuring 0.8cm.Microscopy showed fragments of colonic mucosa and polypoidal fragments composed of colonic crypts lined by tall columnar epithelium having basal nuclei and goblet cells. Stroma contained scanty chronic inflammatory cells.

One case of PeutzJegher Syndrome was seen in a 35 year old male who presented with recurrent abdominal pain since 15 years. Grossly, six polyps were identified in the small intestine with sizes ranging from 1 to 3 cm. Microscopy from the multiple polyps showed papillary fronds with branching smooth muscle core covered by florid, arborising intestinal mucosal epithelium with prominent goblet cells. Some glands were cystically dilated containing mucus secretions. (Figure 3)

Figure 3: PeutzJeghers polyp showing papillary fronds with branching smooth muscle core covered by florid, arborising intestinal mucosal epithelium with prominent goblet cells.



One case of pseudopolyps was identified in a 66 year old male who presented with abdominal distension. He was clinically diagnosed to have Crohn's disease of terminal part of ileum with pseudopolyps. USG showed distension of bowel loops, stricture in distal ileum and dilated bowel loops. Grossly, specimen consisted of ascending colon, distal ileum and appendix. Four centimeter proximal to ileocaecal junction the mucosa is effaced showing few small polypoidal projections. Microscopy from flattened mucosa showed flattening of intestinal folds and sections from dark brown part of ileum

showed ulceration extending to muscularis propria with acute over chronic inflammatory cells. Transmural inflammation with reactive lymphoid nodules was seen. Lymphoid aggregates seen in muscle and serosa. Fibrosis was also seen as well.

There was case of a nine year old male presenting with pain abdomen due to ileoileal intussusception. On gross examination, the segment of small intestine was gangrenous. The mucosal surface was edematous and congested showing a sessile polyp measuring 1.5 x1.5 cm, with grey brown cut surface. Microscopy of the polypoidal mass shows ectopic pancreas in wall of ileum. (Figure 4)

Figure 4: Showing microscopy of the polypoidal mass shows ectopic pancreas in wall of ileum.

There was one case of inflammatory fibroid polyp in the small intestine in a 11 year old who presented with abdominal pain. Grossly, pedunculated polyp measuring 3 x 1 cm was seen.

4. Discussion

The World Health Organisation (WHO) classifies adenomas into tubular (<20% villous architecture), tubulovillous and villous (80% villous architecture), with nearly 87% of adenomas being tubular, 8% tubulovillous and 5% villous.[5, 6]Adenomatous polyps are non-invasive tumours of epithelial cells arising from the mucosa with the potential to become malignant. Only 5% of adenomas have susceptibility of becoming malignant. Mixed polyps are also seen to have the ability to become malignant, as also hyperplastic polyposis syndrome.[5]

Juvenile polyposis coli syndrome (JPS) denotes multiple juvenile or inflammatory polyps distributed throughout the colon or GI tract. JPS is the third most common form of intestinal polyposis, accounting for 1 to 2 cases per 100,000 live births a year.[7] Sporadic juvenile polyps are the most common type of polyp diagnosed in children.[7] Sporadic juvenile polyps are often first diagnosed in patients ranging from 1 to 10 years of age, with a peak incidence between 2 and 4 years of age. In contrast, patients with JPS tend to present at an older age, with a mean age of 9.5 years. Although sporadic juvenile polyps are found in both sexes, there is a slight male predominance in patients with JPS.[7, 8]

In a clinicopathological study of 32 cases of juvenile polyp by Yamagiva *et al*, most polyps occured frequently in the first decade with male predominance. In their study, the polyps were found more frequently in the rectum with size of the polyps within 2 cm in diameter. Majority of the polyps were pedunculated.[8]These findings are seen to be well matching with the results of the present study.

The prevalence of intestinal adenomas varies in different parts of the world and is common in westernized countries. Adenomas are of clinical importance because they can develop into an infiltrating carcinoma. The probability of high grade dysplasia and carcinomatous transformation rises with polyp size, a villous component, when there are many polyps or the age at diagnosis is more than 60 years.[5, 7] The prevention of colorectal cancer can largely be attained by effective screening for adenomatous polyps before they develop the ability to invade. Screening recommendations vary depending on each individual patient's risk, with high-risk patients defined as those with a known inherited predisposition to colorectal carcinoma, a personal history of colorectal adenomas or carcinoma, or a history of IBD. Patients without these risk factors should be screened beginning at age 50 and older with annual fecal occult blood testing or sigmoidoscopy.[5, 7] In a study by Geramizadeh *et al*[1], in which 990 patients with intestinal polyps were studied, most of the polyps were adenomatous and were located in the rectosigmoid area as in the present study.

Hyperplastic polyps are the most common type of polyps in the colon, and are often multiple.[4, 9] The etiology of these polyps is unclear but it is probably related to crypt fusion and defects in apoptosis in combination with hyper maturation of the upper crypt and surface epithelium. Hyperplastic polyps of the colon are recognized by their bland cytology and serrated architecture. They are considered to be non-neoplastic lesions with no malignant potential.[4] Recent studies have shown that "hyperplastic" polyps may progress to colorectal carcinoma at a high rate, especially those that are large in size (>0.5 cm), contain atypical morphology and are right sided in location.[4,9-12] In our study, there was only one case of hyperplastic polyp located in the sigmoid colon of a 64 year old male. Microscopy showed no malignant features.

Familial adenomatous polyposis (FAP) is the most common intestinal polyposis syndrome.[7]It is characterized by the development of adenomatous polyps at an early age in association with numerous extracolonic manifestations. Adenomas emerge at an average age of 16 years, and colon cancers occur at an average age of 39 years.[7] In the present study, we had a 30 year old male with multiple polyps from sigmoid colon to caecum.

PeutzJeghers syndrome (PJS) is an uncommon familial disease first described by Peutz in 1921 and Jeghers in 1949 as cited by Aaltonen *et al*.[13] and Sökmen *et al*.[14] It is a rare autosomal dominant disorder presenting with multiple gastrointestinal hamartomatous polyps and mucocutaneous hyperpigmentation.[14, 15, 16]The average age at PJS diagnosis is 23 year in men and 26 year in women.[17] The disease affects males and females equally.[15, 17] Criteria used to diagnose PeutzJeghers polyp are (i) three or more histologically confirmed PeutzJeghers polyps, or (ii) any number of PeutzJeghers polyps with a family history of PJS, or (iii) characteristic prominent mucocutaneous pigmentation with a family history of PJS, or (iv) any number of PeutzJeghers polyps and characteristic prominent mucocutaneous pigmentation.[13, 15] Around 50% of cases are familial and 50% are sporadic with new mutations. Most of the patients present clinically with abdominal pain, intestinal bleeding, anaemia, intussusception, mucosal pigmentation and intestinal polyposis.[13]

Polyps should be removed because the cancer potential is 15 times greater for patients with PJS than the general population.[13,19] They have a high risk of gastrointestinal or extra gastrointestinal malignancy including gastric, duodenal, jejunal, ileal, and colonic carcinoma as well as malignancies involving other organs such as the gallbladder, biliary tract, pancreas, tonsils, breast, lungs, ovaries, uterus and testis.[13, 18, 19]

In a study done by Choudhary *et al*[20], for a period of five and half years, 12 cases were diagnosed as PJS polyp out of total 46 gastrointestinal polyps in which mean age was 27.75 years showing a male preponderance (75%). In the present study, there was one case of PeutzJeghers polyp seen in a 35 year old male who presented with pain abdomen. The polyps were located in the small intestine.

Inflammatory polyps may be isolated, associated with IBD, or with other forms of colitis,such as infectious colitis, ischemic colitis or diverticulitis.[4,7]Inflammatory polyps of the colon may be classified as the usual type (NOS) ("pseudopolyps"), or associated with mucosal prolapse.[4] Usual type inflammatory polyps are associated with IBD. They represent polypoid areas of inflamed and regenerating mucosa that project above the level of the surrounding mucosa which may be ulcerated. Only rarely, dysplasia, or even carcinoma, may develop in inflammatory polyps related to IBD.[4, 7]In our study, there was one case of a 66 year old male with clinically diagnosed Crohns disease of the terminal ileum. Microscopy showed no dysplastic or malignant features.

Pancreatic heterotopia is presence of pancreatic tissue outside the normal pancreas which has no vascular or anatomic continuity with the pancreas. It is synonymous with pancreatic rest and ectopic pancreas. They usually present as solitary 0.2- to 4-cm nodules, which on endoscopy consists of a smooth surfaced, hemispherical, intramural nodule with a central dimple. They can affect children as well as adults and show a slight male preponderance with male: female ratio of 1:0.7.[7] In our study, there was one case of ectopic pancreas presenting as polyp in a 9 year old male.

In conclusion, it is seen that juvenile polyps the most common type of polyps, found commonly in rectum and in the age group of 0-9 years. Familial adenomatous polyposis and PeutzJeghers polyps are not uncommon since they were diagnosed in a small number of cases in this study. The incidence of malignancy in polyps is 9% with malignant potential seen in tubular and tubulovillous polyps. Also it is seen that ectopic pancreas can present as a polyp.

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