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Original Research Article

Evaluation of Solitary Polypoid Mass in Colorectal Region with Clinico Pathological Correlation

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ABSTRACT

Background: A colorectal polyp is a visible protrusion above the surface of the surrounding normal large bowel mucosa. Various histologic types of polyps are found, common types being juvenile, adenomatous, hyperplastic & inflammatory. The spectrum of polyps varies according to age group and geographic location.

Aim: To study the incidence and distribution of various histologic types of solitary colorectal polypoid lesions separately in pediatric and adult population and analyze the clinico-pathological spectrum.

Materials and Methods: Samples from patients undergoing colonoscopic polypectomy, colonoscopic biopsy and colectomy done for solitary polypoid growth in colorectal region, received in our surgical pathology section over a period of 4 years, prospectively and retrospectively, were included. Data on age, gender, relevant clinical history, site and size of polyps and histology type were recorded.

Results: A total of 86 polypoid lesions were examined out of which 40 cases belonged to the pediatric age group, whereas 46 cases were adult. 70% of the polyps in the pediatric age group were juvenile hamartomatous type, located most commonly in the rectum. In the adult cases, almost 78% of the polyps (36/46) were located in the left colon; adenomatous polyp was the most common type of polyp. Larger polyps were associated with severe degree of dysplasia. 3 cases of Infiltrating Adenocarcinoma and 2 cases of melanoma presented as polypoid mass were also found.

Conclusions: In view of adenomatous polyp being the most prevalent variety in adult population a screening colonoscopy should be emphasized in our country to reduce the incidence of colorectal carcinoma.

Key words: *Polyp, colorectal, juvenile, colonoscopy, adenomatous*

INTRODUCTION

A colorectal polyp is a visible protrusion above the surface of the surrounding normal large bowel mucosa. Colorectal polyps are usually classified as hyperplastic, inflammatory and neoplastic types. In Western countries, colonic polyps are usually adenomatous in nature in the adult population. The commonest polyp in the pediatric group is juvenile hamartomatous polyp.

Most studies support adenomatous colonic polyps being considered precursors to the development of colorectal cancer. [(1)] The risk of malignancy in adenomatous polyp is directly proportionate to the size of polyp and more with features of high grade dysplasia. [(1)] The other types of colorectal polyps rarely convert to malignancy.

Colorectal polyps may be detected colonoscopically or radiographically by barium enema.

Worldwide, the prevalence rate of adenomatous polyps shows geographic variation and correlates with the regional incidence rates of colorectal cancer. [(2)]
An Indian study on colonic polyps in South Indian population reported adenomatous polyp to be the most common type of colonic polyp in adults. [(3)] In eastern India, such literature is lacking.

Aims and Objectives

The present study was aimed to study the histological features and analyze the clinicopathological spectrum of solitary colorectal polypoid lesions in pediatric and adult population encountered in a Medical College of West Bengal.

MATERIALS AND METHODS

All specimens of colonoscopic polypectomy, colonoscopic biopsy and colectomy done for polypoid growth in colorectal region, received in our surgical pathology section over a period of 4 years, prospectively and retrospectively, were included in this study.

Inclusion criteria: All specimens of colonoscopic polypectomy, colonoscopic biopsy and colectomy with a solitary polypoid lesion either sessile or pedunculated, of all age group.

Exclusion criteria:

1. Multiple polypoid lesions and pseudopolyp on histopathological examination.
2. Poorly fixed or autolysed specimens.
3. Polyps of gastrointestinal tract proximal to colon and rectum.

Relevant clinical histories, including family history, and macroscopic findings were noted. Histological examination was carried out by staining with Hematoxylin & Eosin and PAS as necessary. Results were analyzed using Microsoft excel.

RESULTS

A total of 86 polypoid lesions were examined during the study period. The age group of the study population ranged from 3yr to 80 yr. The polyps were divided as non-neoplastic and neoplastic polyps and were further categorized histologically. Out of the total 86 cases studied, majority lesions (approx 72%) were non-neoplastic; while among neoplastic lesions 79.17% were benign.

In this study, 40 cases were in the pediatric age group, whereas 46 cases were in the adult population; the sex ratio of the cases being Male: Female 1.1:1.

The most common presenting feature was hematochezia (in 80%), followed by lower abdominal pain (in 20% patients).

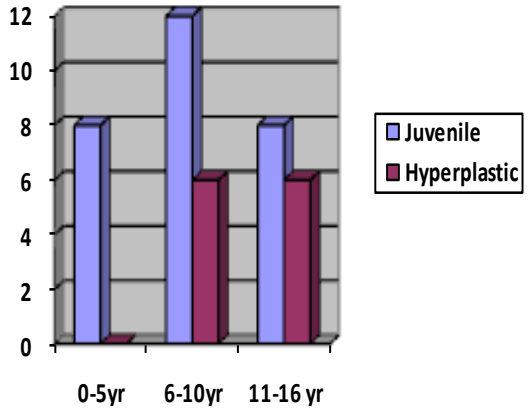


Diagram 1: Age specific Distribution of different Histologic types of pediatric polyps (n=40) (Y axis denotes number of cases)

In the pediatric age group all lesions were non-neoplastic. Fresh bleeding per-rectum was the presenting feature in most of the lesions. Diagnostic colonoscopy was done in all the cases. All of them had a solitary polyp in the left colon, where rectum was the most common site involved. (Table 1) In only 5% cases the polyp was present in sigmoid colon. Colonoscopic removal of the polyps was done with subsequent biopsy. 70% of the polyps in this age group were juvenile hamartomatous type. (Diagram 1)

Table 1: Location wise histologic types in the pediatric population (n=40)

Location	Histological types [%]	
	Juvenile	Hyperplastic
Rectum	28 [70]	10 [25]
Sigmoid colon	0	2(5)

Among the adults, the common presenting symptoms were per rectal bleeding, abdominal pain, unexplained anemia and partial intestinal obstruction. In this series,

almost 78% of the polyps (36/46) were located in the left colon. (Table2.1) Adenomatous polyp was the most common type of polyp in histology, found in 18 cases (39.13%). (Table2.2)

Table 2.1: Location wise histologic types in the adult population (n=46)

Location	Histologic type						Total
	Non-neoplastic			Neoplastic			
				Benign		Malignant	
	Hyperplastic	Inflammatory	Juvenile	Adenomatous	Lipoma		
Rectum	5	4	4	2	0	5	20
Sigmoid colon	2	1	0	4	0	0	7
Descending colon	2	0	0	7	0	0	9
Transverse and ascending colon	3	1	0	5	1	0	10
Total	12	6	4	18	1	5	46

Table 2.2 Frequency of pathologic finding in the adult cases [n=46]

Histologic Finding	Frequency (%)
Adenomatous polyp	18 (39.13)
Non-neoplastic polyp	22 (47.83)
Hyperplastic	12 (26.09)
Inflammatory	6 (13.04)
Juvenile	4 (8.70)
Other neoplasms	6 (13.04)
Infiltrating Adenocarcinoma	3 (6.52)
Melanoma	2 (4.35)
Polypoidal lipoma	1 (2.17)

Table 3: Characteristics of adenomatous polyps, and their relationship with degree of dysplasia [n=18]

Polyp characteristic (n)	Degree of dysplasia (%)	
	Low grade (61.11)	High grade (38.89)
Histological type		
Tubular (12)	8 (66.67)	4 (33.33)
Tubulovillous (6)	3 (50)	3 (50)
Villous (0)		
Size of polyp in cm		
<1 (8)	8 (100)	0
1-2 (8)	4 (50)	4 (50)
>2 (2)	0	2 (100)

Percentages are row percentages

At histology, 66.6% of adenomatous polyps were tubular adenoma with the rest being tubulovillous adenoma. No case showed histology of villous adenoma. In our series, larger polyps were associated with severe degree of dysplasia. Adenomatous polyps >1cm in diameter showed high grade dysplasia in 60% (6 of 10) cases. (Table 3)

12 out of 22 non-neoplastic polyps found in adults were hyperplastic type, 6 were inflammatory while 4 were juvenile polyps.

A single case showed histology of submucosal lipoma, while all the other polyps were epithelial in origin. The patient with submucosal lipoma presented with abdominal pain and recurrent partial intestinal obstruction. On colonoscopy intussusception was present and the tumor was removed with partial colectomy.

Of the 86 specimens resected, there were a total of 5 malignant cases. On histology 3 of these showed infiltrating adenocarcinoma, while 2 cases proved to be malignant melanoma. All these case presented as solitary polyp in the anorectal region. Presenting symptom in both the cases of melanoma was anorectal pain and per rectal bleeding.

Fig1a & 1b.Sessile polyp-histologically diagnosed Tubulovillous adenoma with high grade dysplasia 400x magnification H&E stain

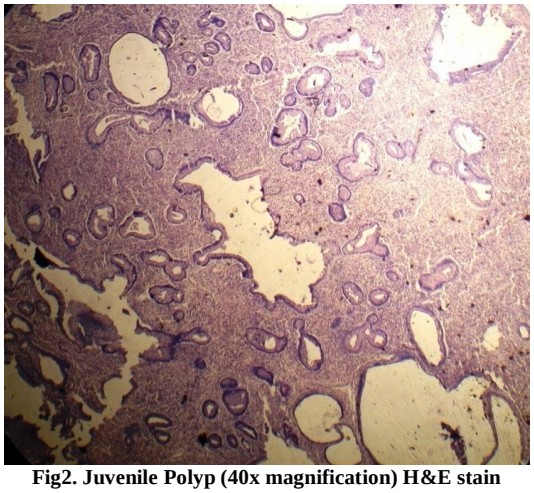


Fig2. Juvenile Polyp (40x magnification) H&E stain

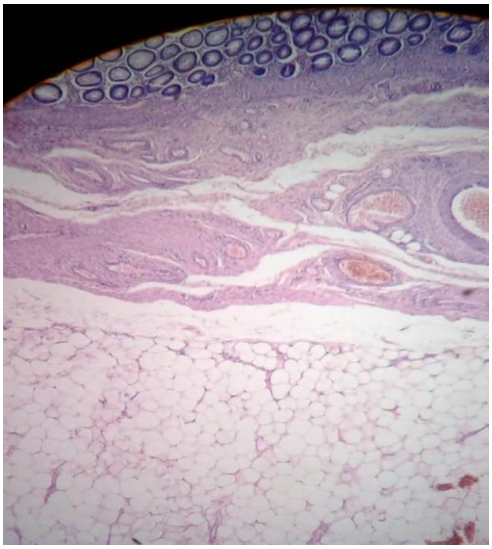
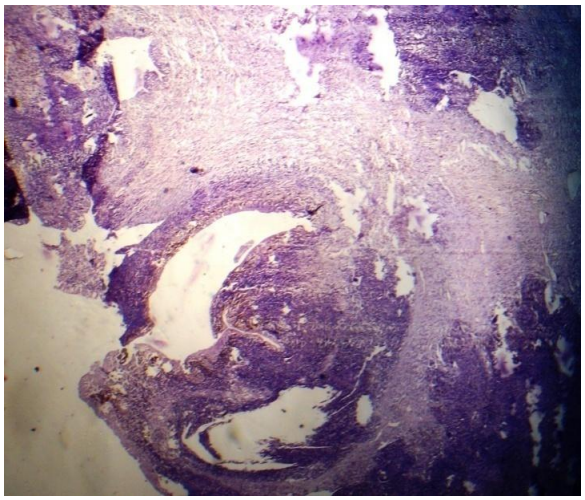


Figure 3a & 3b Submucosal Lipoma Gross & microscopic appearance 40x magnification H&E stain



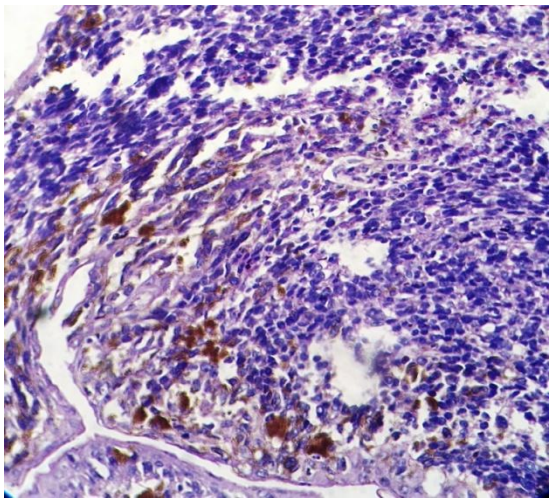


Fig.4a & 4b Melanoma 40x magnification & 400x magnification H&E stain

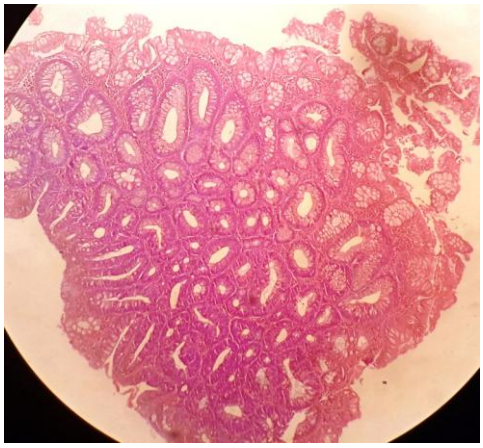


Fig.5 Infiltrating Adenocarcinoma in a polyp 40x magnification H&E stain

DISCUSSION

In our study we separately studied the solitary polyps in pediatric and adult population.

The most common type of polyp encountered in pediatric gastroenterology is the isolated juvenile polyp, also known as retention polyp or inflammatory polyp. [(4)] In our study too, juvenile polyp was the most common histological type (70%) in pediatric age group. Although the etiology is unknown, these polyps are considered to be a developmental malformation consisting of essentially normal mucosal components that are abnormally arranged. [(5)] All juvenile polyps in this study were seen in rectum and they exhibited characteristic histological features. Solitary juvenile polyps carry no risk of intestinal cancer; however Juvenile polyposis syndromes harbor the risk of increased malignancy with an indication for entire colonic survey. [(6)] V N Perisic has shown that colorectal juvenile polyps may be a common cause of rectal bleeding in the preadolescent age group. [(7)] The present study is consistent with the published articles about fresh bleeding per rectum being the most common presenting feature.

The other type of polyp in children found in this study was hyperplasic polyp, 10 cases of which were located in rectum and 2 were in sigmoid colon. This finding corroborated with the study about colorectal polyps in a consecutive cohort of Egyptian children, [(8)] where juvenile polyp (84%) and inflammatory polyp (10%) were the two most common type of polyp. Per rectal bleeding was the commonest presenting feature in hyperplastic polyps, too.

No dysplastic change or malignancy was seen in the biopsy specimens of the pediatric age group.

In our study, 46 cases of adult solitary polypoid mass were examined. Majority of the polyps were located in left colon predominantly in the rectosigmoid area, few cases were seen in the ascending and transverse colon. Haematochegia, altered bowel habit and abdominal pain were predominant presenting features in left colonic polyps, whereas unexplained anemia and melena were features in right and transverse colonic polyps. The most common types of polyp in the current series were adenomatous (39.13%), hyperplastic (26.09%), and inflammatory (13.04%). Tony J et al [(3)] showed adenomatous polyp to be the predominant type of polyp in adults situated in left colon in south Indian population, similar to our study.

Two other studies were published recently about the spectrum of colorectal polyps in different regions of India-one in Chennai by Jain et al, [(9)] and another in Mumbai by Amarapurkar et al. [(10)]

Jain et al [(9)] found 317 colonic polyps in their study, where 3 most common polyp types were adenomatous (48.9%), hyperplastic (23.7%), and inflammatory (22.4%). In the series of Amarapurkar et al, [(10)] amongst 515 colorectal polyps 52.4 % were adenomatous, followed by 15.1 % each of inflammatory and hyperplastic polyps.

In all the three Indian studies that we have compared above, the order of frequency of the three most common colonic polyps remain the same as in our study. The varying individual proportions may be explained by different geographic locations and should be studied further.

Adenomatous polyp can show tubular, tubulovillous and villous architecture. In the present series, 66.6% of the adenomatous polyps were tubular and 33.3% were tubulovillous type. No villous

adenoma was seen in our study. In the series of Tony J et al [(3)] 61 (62%) adenomatous polyps were tubular, 24 (24%) were tubulovillous, and 14 (14%) were villous type. Similar was the case in the series from Mumbai [(10)] where majority of adenomatous polyps 124 (45.9 %) were tubular adenomas present in rectosigmoid. In Western reports, tubular adenoma accounted for 80% to 86%, tubulovillous for 8% to 16%, and villous adenoma for 3% to 16% of adenomatous polyps. [(11, 12)]

The majority of the adenomatous polyps showed low grade dysplasia (LGD) [11; 61.11%], while 7 polyps had features of High grade dysplasia (HGD [38.89%]. High grade dysplasia is present more in tubulovillous type than in tubular type and it is present in larger polyps (> 1 cm in diameter). In our series, adenomatous polyps >1cm in diameter showed high grade dysplasia in 60% (6 of 10) cases. The proportion of HGD was also higher in tubulovillous type than in tubular type (50% vs 33.33%). None of the patients with polyps <1 cm in size in our study had severe dysplasia, while 100% of those >2 cm size had severe dysplasia; corresponding with that of Tony J et al. [(3)]

It is important to diagnose the adenomatous polyps, for the higher risk of developing carcinoma. Atkin et al. [(13)] stated that a polyp size of 1 cm or greater had a significantly increased risk (relative risk of 3.3) of developing subsequent colorectal cancer; but those with polyps less than 1 cm did not have an increased risk of cancer.

Besides adenomatous polyp 21 cases of non-neoplastic polyps were seen, commonest of these were hyperplastic polyp, followed by inflammatory polyp and juvenile polyp. None of these polyps showed any kind of cellular dysplasia. However some studies found a comparatively strong correlation between hyperplastic polyps and adenomas in subjects with an increase risk of colorectal cancer due to family history. [(14)] So family history of colorectal cancer and colonoscopic surveillance is important also for hyperplastic polyps.

We had 3 (6.52%) cases of colorectal adenocarcinoma presented as a polypoid mass. Colorectal carcinoma can arise in pre-existent polyp. Although only few adenomas progress to malignancy, risk of cancer development increases with size, villous component and severe dysplasia. [(15)] A screening colonoscopy can be helpful for early detection of adenomas. A screening colonoscopy at 55 years of age could achieve 30 - 50% reduction in mortality from colorectal carcinomas and its subsequent removal can reduce the incidence of colorectal carcinoma. [(16)] Though routine screening programme is still not practiced in the Indian population.

2 cases of malignant melanoma seen in our study presented as polypoid mass in anorectal region. Both the cases were presented with the symptoms of per rectal bleeding and anal pain. Colonoscopic removal of the polyps was done. Melanin pigment was present in both the tumours. Anorectal melanomas are rare tumours. This entity constitutes only 0.5-4% of all anorectal malignancies and less than 1% of all melanomas. [(17, 18)] These are very aggressive tumours and treatment is only moderately successful.

We found a single case of submucosal lipoma in our study. Presenting symptom of the patient was abdominal pain and recurrent partial intestinal obstruction. A diagnostic colonoscopy was done and a 2cm polyp was detected in descending colon. Colonoscopic removal of the polyp was not possible due to intussusception and the polyp was removed with partial colectomy. Lipoma is the second most common benign colonic tumor following adenomatous polyps and the incidence has been reported to range between 0.2% and 4.4%. [(19)] They are mostly asymptomatic and diagnosed incidentally. Excision and biopsy is the gold standard for confirmed diagnosis.

The limitation that can be highlighted in our study was the small

sample size due to which level of significance could not be tested. A subset of patients was excluded because they had multiple polyps, thereby limiting the sample size.

CONCLUSION

The present study documented the clinicopathological spectrum of solitary colorectal polyps separately in paediatric and adult age group in a suburban medical college of Eastern India. In contrast to western studies the occurrence of adenomatous polyp in adult population was found to be lower, but other parameters were similar to various other Indian studies on colorectal polyps. [3,9,10] In view of adenomatous polyp being the most prevalent variety in adult population a screening colonoscopy should be emphasized in our country to reduce the incidence of colorectal carcinoma.

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