

THE PREVALENCE OF DYSPLASIA IN COLORECTAL SERRATED/HYPERPLASTIC POLYPS IN OMANI POPULATION

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Abstract

Purpose: Serrated/hyperplastic polyps (SPs) are characterised histologically by sawtooth architecture. Historically, these polyps were considered benign, without malignant potential and thus clinically unimportant. At present, the WHO defines serrated/hyperplastic lesions as heterogeneous group, which include hyperplastic polyps (HP), sessile serrated adenoma (SSA)/polyp and traditional serrated adenoma (TSA). These can have malignant potential. The aim of this study was to evaluate the prevalence of dysplastic changes in SP of colon and rectum of Omani population reported at a tertiary care centre.

Methods: The study was conducted in the pathology department of a tertiary care centre including endoscopic polypectomies from colon and rectum of Omani patients presenting to gastroenterology clinic reported between 2014 and 2016, and these were analysed retrospectively for dysplastic changes and their association with different clinical parameters.

Results: Dysplasia was seen in 32 of 146 cases (21.9%) and 114 (78.1%) were without dysplasia. Of these dysplastic, biopsies' only two cases (1.4%) showed high-grade dysplasia and rest 30 (20.5%) low-grade dysplasia. According to the type of polyp, dysplasia was found in TSA 8/21 cases (46.7%) and SSA 9/17 cases (53.3%). Association of dysplasia was more common in the age group of > 50 (15.07%) and male patients (62.5%).

Conclusion: SPs are now common findings that a gastroenterologist faces in their daily practice. In our study of Omani population, the prevalence of dysplasia is associated with older age group, male gender, SSA/polyp and traditional serrated adenoma.

Key words: Dysplasia. colorectal, polyps

Introduction

Polyp is a histological term that describes any circumscribed growth that projects above the surrounding mucosa. The term polyp itself has no ominous clinical significance. Polyp can be neoplastic, inflammatory or hamartomatous. Only histological examination can reveal their true identity, we can appreciate their clinical behaviour.^[1]

In general, intestinal polyps are classified as non-neoplastic or neoplastic. Most common neoplastic polyps are adenomas or adenomatous polyps, which arise due to dysplastic proliferation and have a potency to progress to

cancer. The other types of polyps include hamartomatous, inflammatory and serrated/hyperplastic polyps (SPs).^[1]

SPs are those characterised by sawtooth architecture from which it got its name. Historically, these polyps were considered benign, without malignant potential and thus clinically unimportant.^[2] At present, the WHO defines serrated/hyperplastic lesions as heterogeneous group, which include hyperplastic polyps (HPs), sessile serrated adenoma (SSA)/polyp and traditional serrated adenoma (TSA).^[3] These can have malignant potential.^[3]

HPs are the most common type of SPs accounting for >75% of all serrated polyps.^[4] Typically seen more in the left colon and, in particular, sigmoid and rectum,

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especially in the sixth and seven decades^[5] with no difference in occurrence between males and females.^[6] SSPs are distinguished from HPs by crypt distortion, anchor-shaped or boot-shaped crypts, shown in Figure 1. TSAs lined by hypereosinophilic or pencillate cells.^[7] They represent a hybrid of serrated and conventional adenomas [Figure 2].

It is postulated that sessile serrated polyp pathway starts with a mutation in BRAF oncogene; this mutation promotes cellular proliferation and downregulation of apoptosis pathway.^[8]

The aim of this study was to evaluate the degree of dysplastic changes in SPs of colon and rectum of Omani population reported at a tertiary care centre in Oman.

Materials and Methods

This is a retrospective study. Ethical approval for this study was obtained.

Blocks and slides of tissue taken by colonoscopy of patients presenting to the gastroenterology clinic over a 3-year period were retrieved through hospital information system. These were reevaluated for dysplasia by two pathologists.

All polyps reported as hyperplastic/serrated over a period of 2014–2016 were included in the study regardless of their age or gender. Polyps from other sites in the gastrointestinal tract and non-serrated lesion including adenomatous polyps and inflammatory polyps regardless for their site were excluded from this study.

Clinical parameters which were taken into account were age and sex of the patient, and age and site of polyp. The patients were grouped into three age groups: <18 years representing paediatric population, 18–50 years represent adult age group and patient >50 years old representing older population. The site of lesion was classified on the various parts of colon including cecum, ascending colon, transverse colon, descending colon, sigmoid colon and rectum. The lesions located in the hepatic flexures were regarded as ascending colon and those located in splenic flexure as descending colon. Finally, all the lesions located in cecum, ascending colon and transverse colon were regarded as proximal colon, while those located in

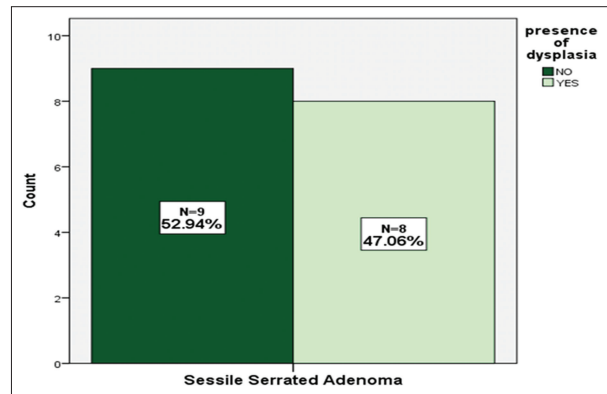


Figure 1: The prevalence of dysplasia in sessile serrated adenoma of this study

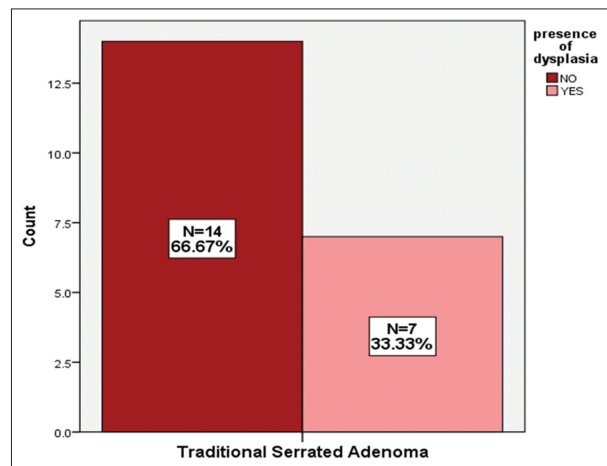


Figure 2: The prevalence of dysplasia in traditional serrated adenoma of this study

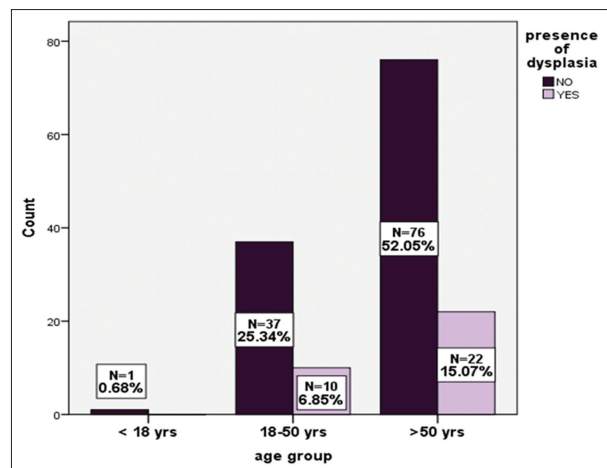


Figure 3: The prevalence of dysplasia amongst different age groups in this study

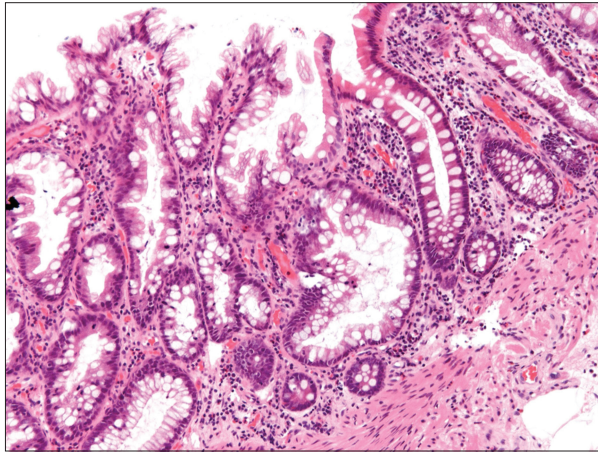


Figure 4: H and E stained side at $\times 20$ magnification showing surface serration, elongation of crypts and few boot-shaped glands. Mild dysplasia is noted in basal crypts

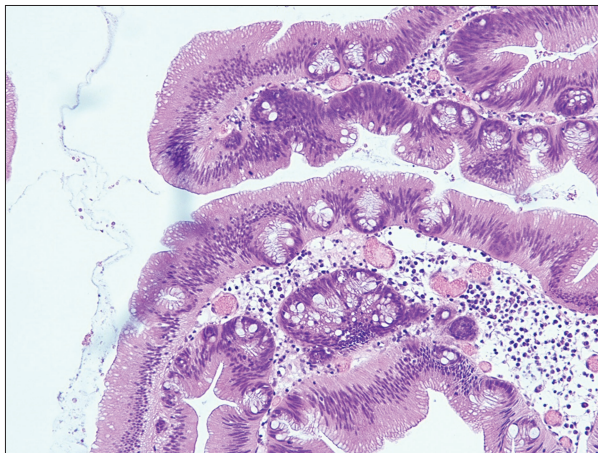


Figure 5: H and E stained section at $\times 20$ magnification showing villous architecture of surface with pencil cells

the descending colon, sigmoid colon and rectum were regarded as distal colon.

Pathological parameters included type of polyp, and presence and degree of dysplasia. Polyps were divided into HP, SSA and TSA. Then, dysplastic changes were categorised into low-grade and high-grade dysplasia.

For data analysis, Statistical Package for the Social Sciences 23 version was used.

Results

This study included 146 biopsies over the duration of 3 years (2014-2016). 99 (67.8%) were male and 47 (32.2%)

were female. Mean age was 55.68 ± 13.74 years (range: 17–83 years). Majority were >50 years 98 (67.1%), 47 (32.2%) from 18 to 50 years and only one (0.7%) patient was under 18 years. HPs were the most common type of serrated polyps 108 cases (73.97%) followed by TSA 21 (14.38%) and 17 (11.64%) were reported as SSA. Hyperplastic polyps and TSAs were found commonly in rectum and descending colon, respectively, but SSA was common in ascending colon.

Overall dysplasia was seen in 32 of 146 cases (21.9%) and 114 (78.1%) were without dysplasia. Of these dysplastic, biopsies' only two cases (1.4%) showed high-grade dysplasia and rest 30 (20.5%) low-grade dysplasia.

Sessile serrated adenoma showed serrated crypts with boot shaped glands in the basal layers, with nuclear and architectural atypia [Figure 4]. Traditional serrated adenoma showed villous architecture with pencil cells having eosinophilic cytoplasm [Figure 5]. According to the type of polyp, dysplasia was found in TSA 8/21 cases (46.7%) and SSA 9/17 cases (53.3%).

Discussion

To the best of our knowledge, this study is the first to demonstrate the prevalence of dysplasia in serrated/hyperplastic lesions in Omani population.

In this study, we reviewed 146 colonic biopsies of serrated lesion over a period of 3 years (2014–2016).

Our study showed mean age of 55.68 with the range of 17–83 years. On the other hand, another study showed the age mean of 61.6 years. Our study showed male predominance in the development of serrated polyps (67.8%) which is consistent with other studies.^[6,9]

According to our data, HPs have higher prevalence with the percentage of 73.97% compared to SSA/polyp and TSA which is consistent with reported literature.^[10] A previous local study showed HPs to have a prevalence of 31.9% of all polyps.^[9]

Regarding the dysplastic changes, our findings showed overall percentage of dysplasia to be 21.9%; the result was similar to a study conducted in South Korea with percentage of 27.4%.^[11] Of these, 46.7% of the TSA

specimens and 53.3% of SSA/P showed dysplastic changes. The overall studies suggest that both SSA and TSA have malignant potential compared to HP.^[12]

We found also that dysplasia detection was higher with older age group of >50 years and showed male predominance, this was consistent with global studies.^[13]

Dysplasia was more common in distal colon compared to proximal with $P = 0.005$. Although, other global studies showed higher prevalence of dysplasia in proximal colon.^[13]

In summary, we report a high prevalence of HPs compared to SSA/polyp and TSA. Age and gender are important risk factors not only for developing serrated lesions but also increase the possibility of dysplastic changes. These are more common in SSA/polyp and traditional serrated. We also concluded that our data based on Omani population are comparable with international data.

Conclusion

Gastroenterologists should be aware of the emerging pattern of serrated lesions of colon and rectum that these are now common abnormality that they can face in their daily practice compared to past. This result could help guide gastroenterologists and endoscopy units in the on-going effort to improve detection and resection of precancerous serrated lesions. However, multicentre large sample-sized prospective studies are needed for further confirmation of our results. In addition, we require a better understanding of the molecular defects associated with serrated to optimally affect screening and prevention of all sporadic colorectal cancer.

Conflict of Interest

The authors declare that they have no conflict of interest.

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Authorship Contributions

Concept and Design: AQ, NH, AS; Data Collection and interpretation: NH, AQ; Literature review and drafting: NH, AQ; Manuscript approval: AQ, NH, AS