Original Article

Frequency Of Colonic Lesions In Acromegaly

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Abstract

Background and Aim: Acromegaly is an uncommon condition that affects 4-6 people per million each year. Acromegaly increases mortality and morbidity caused by cardiovascular and pulmonary complications, as well as cancers originating mostly in the colon. The purpose of the current study was to determine the frequency of colonic lesions in acromegaly.

Patients and Methods: This retrospective cohort study was carried out on 63 patients diagnosed as Acromegaly visiting Endocrine Clinic in JPMC from 1st April 2007 till 31st March 2023. Detailed history, clinical examination and colonoscopic findings were recorded in a predesigned structured proforma. Clinical and hormonal profiles and colonoscopic findings were assessed in this time period.

Results: The overall mean age was 32.10±12.39 years. Patients were distributed into three groups based on their age as follows: 27 (42.9%) in 10-30 years, 23 (36.5%) in 31-50 years, and 13 (20.6%) >51 years. There were 30 (47.6%) male and 33 (52.4%) females. About 37 (58.7%) patients had complaint of headache. On diagnosis, the incidence of acromegaly, postop and radio acromegaly, postop acromegaly, and post radio acromegaly was 35 (55.6%), 2 (3.2%), 7 (11.1%), and 1 (1.6%) respectively. Among 63 acromegaly patients, the incidence of adenomatous, inflammatory, hyperplastic, hamartomatous polyps, benign epithelial polyps, cap polyps, lipomatous polyps, angiomatous polyps, and lymphoid were 29 (46%), 9 (14.3%), 9 (14.3%), 4 (6.3%), 4 (6.3%), 3 (4.8%), 2 (3.2%), 1 (1.6%), and 2 (3.2%) respectively.

Conclusion: The present study found that Acromegaly has a small association with colonic lesions. Most patients do not have any bowel symptoms and have normal colon on colonoscopies.

Keywords: Colonic lesions, acromegaly, IGF-1

INTRODUCTION

Acromegaly is an increase of IGF-I production caused by excessive secretions of GH is mainly associated with pituitary somatotropinoma. The proto-oncogenes production, cellular development, and proliferation are increased by these two hormones [1, 2]. Furthermore, acromegaly is related to the higher incidence of hyperinsulinemia and poor glucose tolerance caused by insulin resistance [3]. The hyperinsulinemia involvement in causing the colorectal cancer is well understood and diabetics have a higher risk of developing colorectal cancer than nondiabetics [4, 5]. Several modest studies have found that people with acromegaly had a considerably higher risk of acquiring adenomatous colonic polyps and colorectal cancer [6, 7]. The insulin-like growth factor-1 (IGF-1) and GH successful treatment increased by different available techniques decrease the mortality rate especially in the general population using integrated strategy [8].

It has been reported that colonic neoplasms develop either types benign or malignant associated with acromegaly for >35 years [9]. Despite a modest decline in incidence and death, colorectal carcinoma remains the second and third most frequent cancer in females and males respectively [10]. These carcinoma initiate and progress from premalignant adenomatous lesions and has been associated with various risk factors such as diabetes, poor nutrition, smoking, obesity, and epigenetic processes [11, 12]. Based on IGF-1 and GH mitogenic activities, acromegaly and colonic neoplasms has been associated with weak intestinal transit [13, 14]. There is inconsistent evidence about the association between acromegaly patients with increasing insulin resistance, GH, IGH-I levels, and colon polyps [15-17]. There is limited data available regarding the frequency of colonic polyps in acromegaly patients. Therefore, the purpose of the current study was to determine the frequency of colonic lesions in acromegaly.

METHODOLOGY

This retrospective cohort study was conducted on 63 patients diagnosed as Acromegaly visiting Endocrine Clinic in JPMC from 1st April 2007 till 31st March 2023. Detailed history, clinical examination and colonoscopic findings were recorded in a predesigned structured proforma. Clinical and hormonal profiles and colonoscopic findings were assessed in this time period. Individual with polypectomy history and colorectal cancer family history were excluded. All polyps were located during colonoscopy. After receiving informed agreement from the patients, polypectomy was undertaken. The pathology laboratory received all recovered polypoid lesions for histological assessment. After an overnight fast, venous blood was collected and centrifuged at 3000 rpm for 30 minutes at 4°C. Standard procedures were used to test plasma glucose. Serum GH levels were determined using an immunoradiometric assay and Serum GH levels were determined using an immunoradiometric assay.

SPSS version 27 for was used to analyse the data. The Shapiro Wilk test was used to examine if the continuous variables were normally distributed. Quantitative variables were expressed as mean and standard deviation whereas qualitative variables were described as frequency and percentage. All the descriptive statistics were done using 95% confidence interval and 5% level of significance.

RESULTS

The overall mean age was 32.10±12.39 years with an age range 12 to 65 years. Patients were distributed into three groups based on their age as follows: 27 (42.9%) in 10-30 years, 23 (36.5%) in 31-50 years, and 13 (20.6%) >51 years. There were 30 (47.6%) male and 33 (52.4%) females. About 37 (58.7%) patients had complaint of headache. Baseline characteristics of acromegaly patients are shown in Table-I. On diagnosis, the incidence of acromegaly, postop and radio acromegaly, postop acromegaly, and post radio acromegaly was 35 (55.6%), 2 (3.2%), 7 (11.1%), and 1 (1.6%) respectively as shown in Figure-1. The frequency of Galactorrhoea, skin changes, vaginal dryness, infections, polydipsia polyuria, acne, Cushingiod habitus, Galactorrhoea2, tremors, tuberculosis (TB), and muscle hypertrophy was 3.2% (n=2), 28.6% (n=18), 6.3% (n=4), 7.9% (n=5), 39.7% (n=25), 6.3% (n=4), 1.6% (n=1), 1.6% (n=1), 9.5% (n=6), 7.9% (n=5), and 19% (n=12) respectively as depicted in Figure-2. Clinical and Biochemical Characteristics of Patients are shown in Table-II. Among 63 acromegaly patients, the incidence of adenomatous, inflammatory, hyperplastic, hamartomatous polyps, benign epithelial polyps, cap polyps, lipomatous polyps, angiomatous polyps, and lymphoid were 29 (46%), 9 (14.3%), 9 (14.3%), 4 (6.3%), 4 (6.3%), 3 (4.8%), 2 (3.2%), 1 (1.6%), and 2 (3.2%) respectively as shown in Table-III. The most prevalent type of polyps was rectal region (47.6%) followed by sigmoid region (22.2%), cecum (7.9%), ascending (7.9%) and transverse colon (7.9%) and descending colon (6.5%) as illustrated in Figure-3.

Table-I baseline characteristics of acromegaly patients (N=63)

Characteristics	Value
Age (years)	32.10±12.39 (12-65)
Age Group (years)	
10-30	27 (42.9)

31-50	23 (36.5)
>51	13 (20.6)
Gender N (%)	
Male	30 (47.6%)
Female	33 (52.4%)
Marital Status N (%)	
Single	23 (36.5)
Married	31 (49.2)
Divorce	4 (6.3)
Headache N (%)	
Yes	37 (58.7)
No	8 (12.5)
Menstruation N (%)	
AMENORRHEA	11 (17.5)
OLIGOMENORRHEA	5 (7.9)
POLYMENORRHEA	1 (1.6)
MENOPUSE	3 (4.8)
PRIMARY AMENORRHEA	1 (1.6)
Galactorrhoea N (%)	
Yes	2 (3.2)
No	38 (60.2)
Infertility N (%)	
Prim	4 (6.3)
Secondary	1 (1.6)

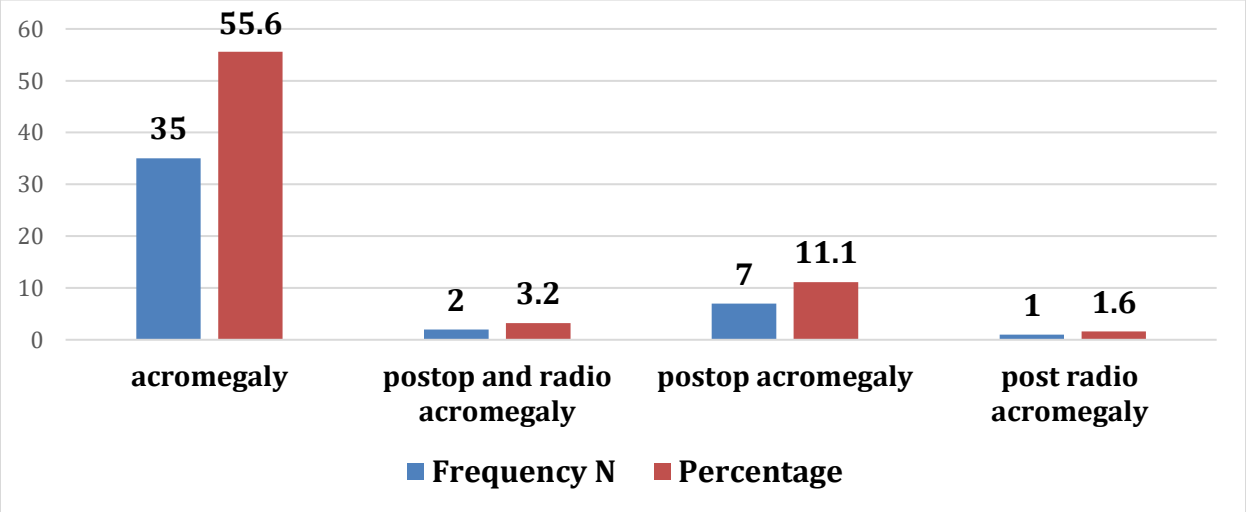

Figure-1 incidence of acromegaly, postop and radio acromegaly, postop acromegaly, and post radio acromegaly

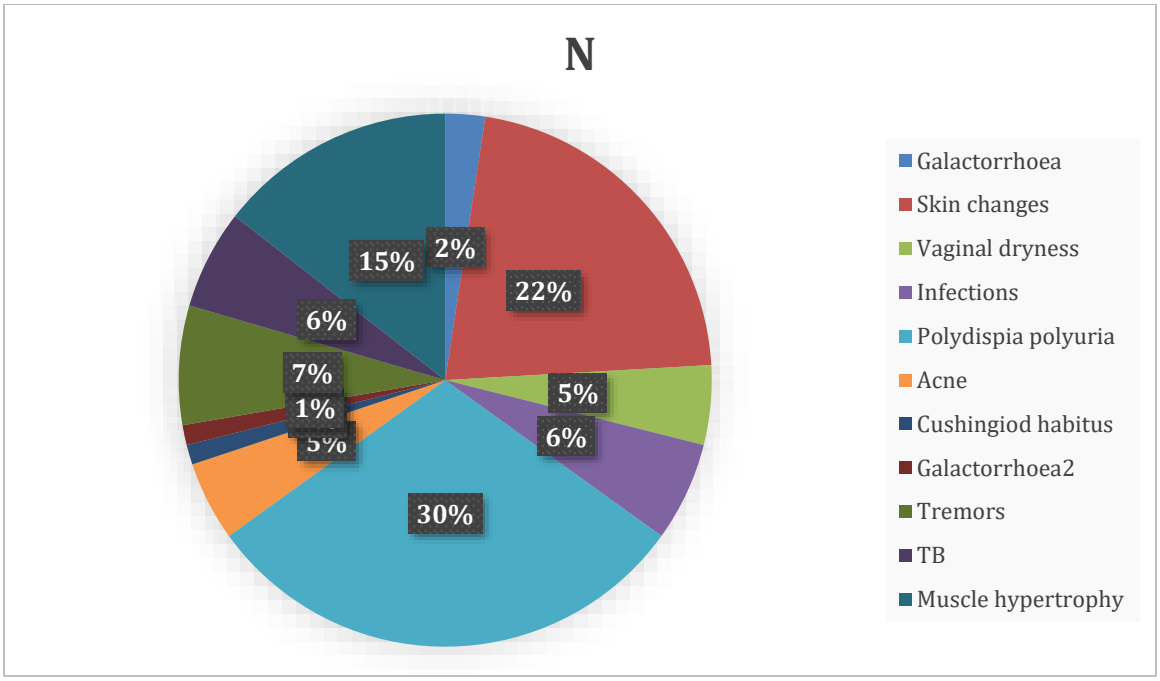

Figure-2 frequency of Galactorrhoea, skin changes, vaginal dryness, infections, polydipsia polyuria, acne, Cushingiod habitus, Galactorrhoea2, tremors, tuberculosis (TB), and muscle hypertrophy in acromegaly patients

Table-II Clinical and Biochemical Characteristics of Patients

Characteristics	Value
Stage N (%)	
I	2 (3.2)
II	1 (1.6)
III	1 (1.6)
IV	1 (1.6)
V	1 (1.6)
FT3	2.30±1.334
FT4	2.85±0.784
TSH	2.77±0.598
GH	0.88±0.545
IGF-1	0.68±0.475
FSH	2.10±1.399
LH	2.10±1.469
E2	0.43±1.006
T	1.13±1.310

Table-III Different colorectal polyps (N=63)

Colorectal Polyps	N (%)
Adenomatous	29 (46)
Inflammatory	9 (14.3)
Hyperplastic	9 (14.3)

Hamartomatous polyps	4 (6.3)
Benign epithelial polyps	4 (6.3)
Cap polyps	3 (4.8)
lipomatous polyps	2 (3.2)
Angiomatous polyps	1 (1.6)
Lymphoid	2 (3.2)
Total	63 (100)

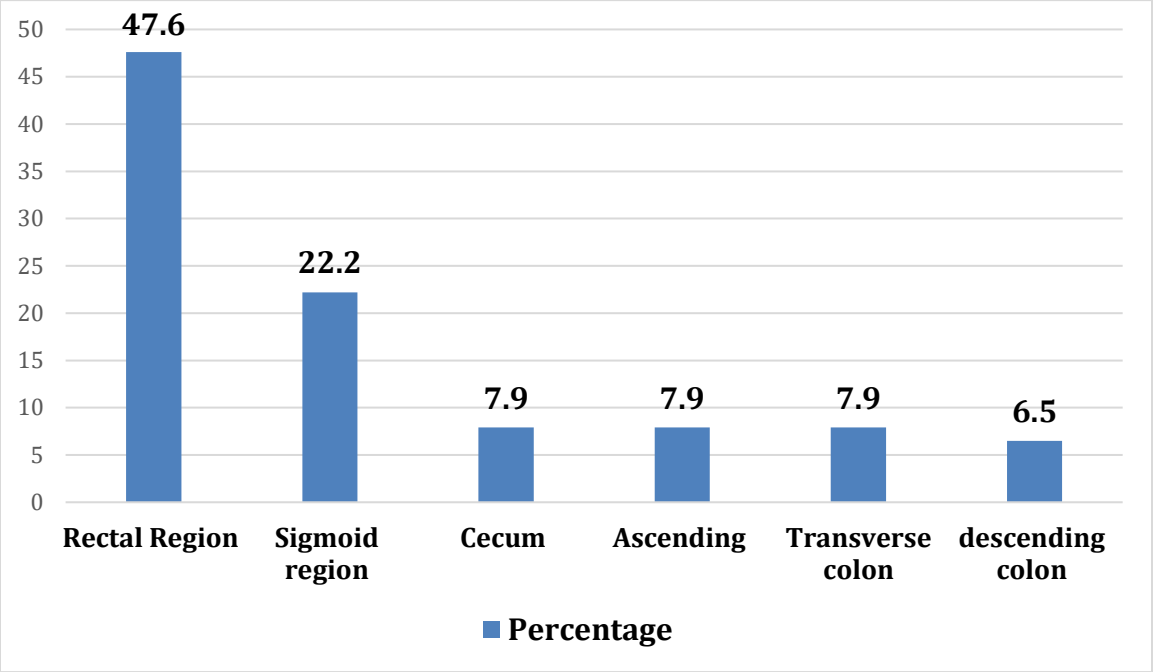

Figure-3 Characteristics of polyps

DISCUSSION

The present study mainly focused on the frequency of colonic polyps in acromegaly patients and reported that acromegaly patients had higher incidence of colonic polyps, which had higher levels of GH, IGF-I, and insulin and was made up with a greater number of diabetics. However, we found no characteristics that may predict polyps in acromegalic individuals. Studies on the relationship between acromegaly and the cancer risk have focused mostly on colorectal malignancies; nevertheless, past findings are unsatisfactory on the subject. The incidence of colorectal cancer in acromegaly is currently being disputed in the literature [18-21]. Ochiai et al. [22] reported that 38.6% patients had colonic lesions in acromegalic individual [22].

The growing incidence of colonic polyps varied from 6% to 30% in acromegaly patients whereas 4% to 10% patients had colorectal cancers [23, 24]. According to a recent meta-analysis, acromegaly patients had 2 to 5 time's higher susceptibility of colonic polyps than non-acromegaly patients to develop adenomatous and hyperplastic polyps [25]. Thus, while most authorities now agree that individuals with acromegaly have an elevated chance of colorectal neoplasia development, the degree of that risk is still being debated [26].

The current retrospective study in the Acromegaly clinic are evaluated using specific pre-designed protocol, which comprises a thorough colonoscopy upon diagnosis and prior to any therapy intervention. Base on a previous study, the insulin levels and diabetes existence were significantly related with adenocarcinoma and colon polyps but had

nothing to do with GH and IGF-I levels. Numerous studies attempted on assumption that higher IGF-I and GH levels are significantly associated with low IGFBP-3 levels. In a previous investigation, the colonic lesions rate was 51.7% accounting for 10.3% cases of colonic cancer [27].

There is evidence that diabetes is linked to colonic cancer increasing risks [28, 29]. Another study discovered that diabetics had a 30% greater risk of colorectal cancer than non-diabetics [30]. Hyperinsulinemia is the primary cause of an elevated risk of colon cancer in people with diabetes [31]. The colonic mucosa cells impacted by insulin significant growth factor and mitogenic effect on colon cancer cells [32]. Apoptosis is inhibited by insulin-like growth factor-1 (IGF-I). The colon cancer tissue and colorectal epithelial cells found in IGF-I receptors has the potential to impact both the pre-malignant and neoplastic phases.

Based on repeat colonoscopy, new adenoma patients had higher levels of IGF-I than those with no new lesions as reported by a previous study [33]. Wang et al. [34] reported that patients with hyperplastic polyps had greater mean IGF-1 levels than those with adenomatous polyps.

CONCLUSION

The present study found that Acromegaly has a small association with colonic lesions. Most patients do not have any bowel symptoms and have normal colon on colonoscopies. Colonic polyps are more common in acromegaly individuals than in IBS patients.

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