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CLINICO-RADIOGRAPHIC STUDY BY COMPUTED TOMOGRAPHY FOR THE EVALUATION OF ILEOCECAL VALVE LIPOMATOSIS

Dr. Vivek Mahawar

Assistant Professor, Department of Radiodiagnosis, Saraswati Institute of Medical Sciences, Hapur, Uttar Pradesh

Address for Correspondence

Email id: drmahawarvivek@gmail.com

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ABSTRACT

Introduction: Deposition of fat in the submucosa of the ileocecal (IC) valve leads to ileocecal valve lipomatosis which is accurately diagnosed with CT scan being specific and sensitive for the same.

Aims: To assess the prevalence of ileocecal valve lipomatosis in routine radiological assessment, to assess gender or age predilection in ileocecal valve lipomatosis development, and to assess the association of idiopathic inflammatory bowel disease or obesity with valve lipomatosis.

Methods: Ct abdomen subjects were included with the exclusion of follow-up and routine subjects making a total sample of 400 subjects. The subjects were evaluated concerning bowel abnormalities, obesity, gender, and/or age.

Results: There were 10.25% (n=4) underweight subjects in the study, 35.89% (n=14) normal weight subjects in the study, 12.82% (n=5) overweight subjects, and 41.02% (n=16) obese subjects in the present study. In underweight subjects of the study there were 2.56% (n=1) male and 7.69% (n=3) females. Among normal weight subjects, there were 23.07% (n=9) males and 12.82% (n=5) females, in overweight subjects, there were 10.25% (n=4) males and 2.56% (n=1) female subjects. Among the obese subjects, there were 17.94% (n=7) males and 23.07% (n=9) females subjects in the present study.

Conclusion: The study concludes that IC valve lipomatosis is an uncommon finding in routine radiological findings even in subjects of age <40 years. No predominance was seen in females and no association between inflammatory bowel disease to IC valve lipomatosis. However, association with obesity was seen in IC valve lipomatosis.

Key Words: Bowel disease, Crohn's disease, CT scan, IC valve, Intestine, Lipomatosis

INTRODUCTION

The proliferation of the normal fat present in the soft tissues is termed Lipomatosis. Lipomatosis can be seen in various tissues of the body including the ileocecal valve, pelvis, intestine, kidneys (in the renal sinus), and/or mediastinum. Lipomatosis can remain undiagnosed for a considerable time.[1]

Lipomatosis seen in the ileocecal valve is known as ileocecal valve lipomatosis. It is seen due to the deposition of the fat in the submucosal layer of the lips of the ileocecal valve. The lipomatosis of the ileocecal valve can be only diagnosed on a routine radiographic examination which can otherwise remain undiagnosed.[2]

Ileocecal valve lipomatosis is known by various other names including ileocecal valve syndrome, fatty degeneration of the ileocecal valve, lipohyperplasia of the ileocecal valve, and/or hypertrophy of the ileocecal valve. However, the most acceptable terminology is ileocecal valve lipomatosis. In contrast to lipoma, a distinct capsule is not seen with

lipomatosis. It is been accurately diagnosed with CT (computed tomography) scan as it is highly specific and sensitive for lipomatosis of the ileocecal valve.[3]

The present study was conducted to assess the prevalence of ileocecal valve lipomatosis in routine radiological assessment, to assess gender or age predilection in ileocecal valve lipomatosis development, and to assess the association of idiopathic inflammatory bowel disease or obesity with ileocecal valve lipomatosis.

MATERIALS AND METHODS

The present prospective clinical study was conducted to assess the prevalence of ileocecal valve lipomatosis in routine radiological assessment, to assess gender or age predilection in ileocecal valve lipomatosis development, and to assess the association of idiopathic inflammatory bowel disease or obesity with ileocecal valve lipomatosis.

The study included 400 subjects from both genders visiting the Department of Radiology of the Institute during the study period. After explaining the detailed study design informed consent was taken from all the study subjects. The inclusion criteria for the study were subjects undergoing CT abdomen (both contrast-enhanced or plain) at the Institute and were willing to participate in the study. The exclusion criteria were repeated radiographs, follow-up radiographs, and subjects not willing to participate in the study.

After the final inclusion of the study subjects, CT scans were done for all the subjects using a 128 slice CT scanner whereas, in all the study participants, axial scans of the abdomen were taken. Among the total of 400 cases of CT abdomen, all were evaluated to assess the absence/presence of ileocecal valve lipomatosis.

For all the subjects showing ileocecal valve lipomatosis on the CT scan, BMI (body mass index), gender, and age were noted. Also, in subjects where ileocecal valve lipomatosis was seen on the CT scan, they were thoroughly assessed concerning CT findings of other bowel-related pathologies with a special focus on ulcerative colitis and Crohn's disease.

The collected data were statistically analyzed and were expressed in mean values, percentages, and numbers.

RESULTS

The present prospective clinical study was conducted to assess the prevalence of ileocecal valve lipomatosis in routine radiological assessment, to assess gender or age predilection in ileocecal valve lipomatosis development, and to assess the association of idiopathic inflammatory bowel disease or obesity with ileocecal valve lipomatosis. Among included 400 subjects, ileocecal valve lipomatosis was seen in 9.75% (n=39) of study subjects.

Among these 39 subjects, the mean age of the study subjects was 36.42±6.28 years. The majority of the study subjects were in the age range of 41-60 years with 35.89% (n=14) subjects followed by 30.76% (n=12) subjects in the age of >60, 28.20% (n=11) subjects in the age range of 21-40 years, and least 5.12% (n=2) subjects in the age range of 0-20 years. There were 51.28% (n=20) males and 48.71% (n=19) females in the present study as shown in Table 1.

For BMI categories, subjects were divided into 4 groups namely Underweight (<18.5), Normal (18.5-25), Overweight (25-30), and Obese (>30). There were 10.25% (n=4) underweight subjects in the study, 35.89% (n=14) normal-weight subjects in the study, 12.82% (n=5) overweight subjects, and 41.02% (n=16) obese subjects in the present study as depicted in Table 2.

Of the underweight subjects of the study, there were 2.56% (n=1) male and 7.69% (n=3) females in the present study. Among normal-weight subjects, there were 23.07% (n=9) males and 12.82% (n=5) females, in overweight subjects, there were 10.25% (n=4) males and 2.56% (n=1) female subjects. Among the obese subjects, there were 17.94% (n=7) males and 23.07% (n=9) females subjects in the present study as shown in Table 3.

DISCUSSION

In the lipomatosis of the intestine, the deposition of the fatty tissue is usually confined to the submucosal layer. However, it can also extend to the mesenteric fat and serosa. In a few cases, the association of the intestinal polyposis and diverticulosis or multiple subcutaneous lipomas is seen with fat infiltration in the pancreas leading to malabsorption secondary to exocrine pancreatic insufficiency as depicted by Pariente et al[4] and Ranchod M et al[5] in their studies.

In IC valve fat deposition, the cause is unknown and is more commonly seen in the females as reported by Boquist L et al.[6] However, the results of the present study were contrasting as no female predilection was shown by the results of the present study for IC valve lipomatosis. Berk RN reported the uncommon occurrence of IC valve lipomatosis in subjects of age <40 years and most common in 50-70 years of age. These results were contradicting the present study results as IC valve lipomatosis was seen in the subjects of all age groups. Bhupalan et al[7] have reported the association

between IC valve lipomatosis and obesity. These results were in agreement with the findings of Berk RN et al where an association was established between obesity and IC valve lipomatosis. IC valve lipomatosis has also been linked to Crohn's disease and ulcerative colitis. However, in the present study, no cases of IC valve lipomatosis were seen associated with ulcerative colitis or Crohn's disease.

Most cases of IC valve lipomatosis are without any associated symptoms, increase in size presents symptoms with the most common being bleeding, diarrhea, constipation, and/or abdominal pain with rare complications being massive hemorrhage, intussusception, and obstruction as suggested by Vasiliadis K et al[8] in 2008. Nearly half of subjects with IC valve lipomatosis have symptoms. These symptoms can be attributed to enlargement of the valve causing intermittent intussusception of the colocolic as suggested by Thompson WM et al in 2005.[9]

Also, IC valve lipomatosis is seen with inflammatory/infective pathologies including diverticulitis, colitis, appendicitis, tuberculosis, and/or Crohn’s disease, and malignant and benign tumors. Accurate and prompt diagnosis can cause successful treatment outcomes. Without high suspicion levels, ultrasounds might miss the IC valve lipomatosis. However, a CT scan remains the best imaging technique for IC valve evaluation. IC valve lipomatosis on CT scan is seen as homogeneous intramural fat density which is well-defined within attenuation of -80=-120 HU and is well-differentiated from lipoma which is asymmetric on radiography as depicted by Hoeffel C et al[10] in 2006.

No treatment is usually needed for IC valve lipomatosis in asymptomatic subjects. However, when suspected of malignancy or is bigger causing obstruction, surgery can be done.

CONCLUSION

The study concludes that IC valve lipomatosis is an uncommon finding in routine radiological findings even in subjects of age <40 years. No predominance was seen in females and no association between inflammatory bowel disease to IC valve lipomatosis. However, association with obesity was seen in IC valve lipomatosis.

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TABLES

S. No	Characteristic	Percentage (%)	Number (n)
1.	Mean age (years)	36.42±6.28	
2.	Age range (years)		

a)	0-20	5.12	2
b)	21-40	28.20	11
c)	41-60	35.89	14
d)	>60	30.76	12
3.	**Gender**		
a)	Males	51.28	20
b)	Females	48.71	19

Table 1: Demographic data of the study subjects with IC valve lipomatosis

S. No	BMI categories	Percentage (%)	Number (n)
1.	**Underweight (<18.5)**	10.25	4
2.	**Normal (18.5-25)**	35.89	14
3.	**Overweight (25-30)**	12.82	5
4.	**Obese (>30)**	41.02	16
5.	**Total**	100	39

Table 2: BMI based distribution of the study subjects