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ADULT SIGMOID-RECTAL INTUSSUSCEPTION: UNCOMMON BUT NOT FORGOTTEN.

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ABSTRACT

Adult intussusception is not uncommon a condition that accounts for only 5% of all intussusception cases. Most of the adult intussusception has a lead point in 70-90% of cases. Presenting symptoms and signs can be non-specific and mostly indicate bowel obstruction, where there is a myriad of causes. Therefore, multiple modalities can be employed to diagnose this condition with CT imaging holds the highest diagnostic accuracy, although other modalities may be adjunct in further management of patient. Herein, we report a case of a 90-year-old gentleman who presented with non-specific symptoms and was eventually diagnosed with sigmoid-rectal intussusception on CT scan, in which prior endoscopic procedure was not able to identify the pathology. This case emphasizes the diagnostic value of CT imaging in diagnosing adult intussusception, particularly in adult patients who present with non-specific abdominal symptoms.

Keyword: Colonoscopy, Computed Tomography, Gastroenterology, Intussusception, Radiology.

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ABSTRACT

Adult intussusception is not uncommon a condition that accounts for only 5% of all intussusception cases. Most of the adult intussusception has a lead point in 70-90% of cases. Presenting symptoms and signs can be non-specific and mostly indicate bowel obstruction, where there is a myriad of causes. Therefore, multiple modalities can be employed to diagnose this condition with CT imaging holds the highest diagnostic accuracy, although other modalities may be adjunct in further management of patient. Herein, we report a case of a 90-year-old gentleman who presented with non-specific symptoms and was eventually diagnosed with sigmoid-rectal intussusception on CT scan, in which prior endoscopic procedure was not able to identify the pathology. This case emphasizes the diagnostic value of CT imaging in diagnosing adult intussusception, particularly in adult patients who present with non-specific abdominal symptoms.

Keyword: Colonoscopy, Computed Tomography, Gastroenterology, Intussusception

INTRODUCTION

Intussusception is a condition described as intestinal invagination or telescoping of a bowel segment (intussusceptum) into the adjacent proximal or distal bowel (intussusciens).^{1,2} Majority of the cases are of the paediatric age group, whilst only 5% of all intussusception occurs in adult patients.^{1,3} The causes for intussusception in paediatric aged group are mostly idiopathic, which accounts for 90% of cases.⁴ This is in contrast to the adult-aged group where a leading point is usually demonstrable, which is a well-delineated abnormality in 70-90% of cases.^{1,3}

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Children typically present with acute abdominal pain, bleeding from the rectum, and palpable abdominal mass which are seldom present in adult patients.⁵ Non-specificity of symptoms in adult patients poses a diagnostic challenge as most signs and symptoms are suggestive of bowel obstruction.^{1,3,6} Medical imaging such as ultrasonography and CT scan, holds diagnostic value in identifying the actual pathology. Apart from these modalities, endoscopy can also be utilised for diagnostic as well as therapeutic purposes in managing intussusception.^{3,4} We describe an uncommon adult sigmoid-rectal intussusception secondary to the rectal tumor in which the intussusception was missed in the initial endoscopic procedure, albeit, diagnosed after CT imaging was performed. We emphasize the role of CT imaging in confirming the diagnosis of intus-

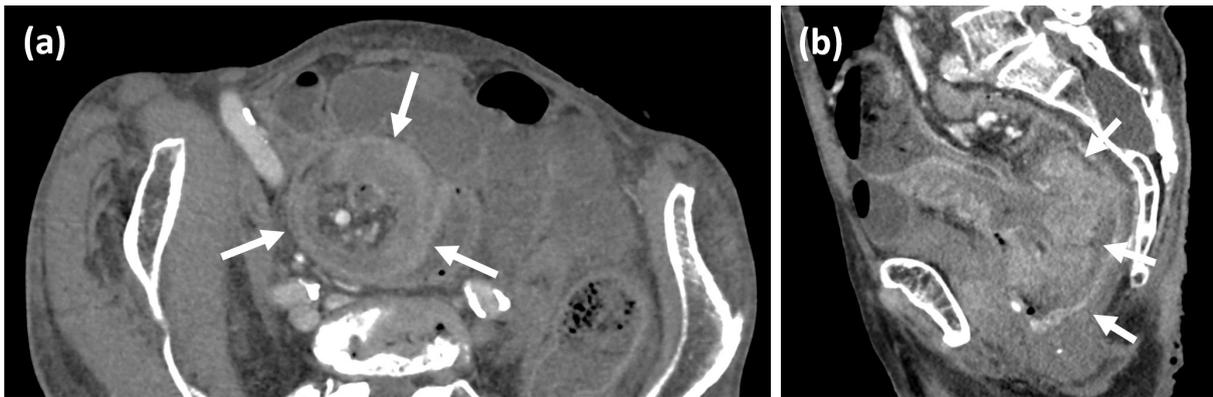


Figure 1: Contrast-enhanced CT scan of the pelvis, transverse section (a) and sagittal section (b). The intussusception is depicted as telescoping of the sigmoid colon and its mesosigmoid into the rectum with typical 'target-sign' as seen in image (a) and large ill-defined mass within the rectal lumen (white arrows).

susception in adults.

CASE REPORT

A 90-year-old gentleman presented with painless rectal bleeding for 3 days which was preceded by intermittent loose stool with loss of appetite and loss of weight (unable to quantify) for the past 1 month. On physical examination, vital signs were normal. His abdomen was distended and non-tender. There was no obvious mass on palpation. Per rectal examination with proctoscope revealed a fungating intraluminal rectal mass felt, 4 cm from the anal verge which bleeds upon contact with contact. Blood parameters were unremarkable at that point of time during the presentation; however, the CEA level was raised measuring 17.5 ug/L.

Plain abdomen radiographs performed were unremarkable. There was no obvious bowel dilatation or pneumoperitoneum. Colonoscopy was subsequently performed on the next day which demonstrates a tumor at the lower rectum approximately 7 cm from the anal verge. There was intraluminal narrowing at the level of the tumor, however, the colonoscope was still able to pass through with normal mucosa seen distal to the tumor. A biopsy was taken in the same setting and showed highly dysplastic glands. CT abdomen and pelvis performed on the same day showed a rec-

tal mass approximately 4 cm from the anal verge complicated with rectosigmoid intussusception and proximal bowel dilatation (Figure 1).

The patient was counseled for surgery and options of anterior resection of tumor or stoma creation were given; however, the patient was not keen on operation despite the risks had been explained if surgery was not promptly performed.

At the time of writing this, the patient still has persistent rectal bleeding with further deterioration of the condition which causes the patient to be bedridden. Despite the worsening condition, the patient was still not keen on surgical intervention.

DISCUSSION

Intussusception commonly affects the paediatric-aged group predominantly with an estimation of a 20:1 ratio compared to the adult-aged group. The incidence of adult intussusception is approximately 2-3 cases per million of the general population per year, commonly affecting those after the fifth decade. Adult intussusception includes less than 5% of all cases of intussusception and is discovered in 1% of patients having bowel obstruction.⁶

There are a few types of intussuscep-

tions which can be divided according to the location of the involved bowel, namely the enteric, ileocolic, and colo-colonic types.^{4,6,7} The rate of incidence is 49.5%, 29.1%, and 19.9%, respectively.⁶ Some authors have described that the small bowel is more commonly affected compared to ileocolic type^{3,4,6} while others have reported vice versa.^{3,8} Nevertheless, the colo-colonic type has been consistently reported as the least common type.^{3,4,6,8} In contrast to intussusception in children, approximately 90% of adult intussusception has a leading point. These leading points can be further divided according to the nature of the lesion- either benign or malignant. The majority of the leading points in the enteric type are benign in nature, whereas malignant aetiology accounts for 30% of cases only.⁹ In comparison, the colonic type of adult intussusception has an underlying malignant leading point ranging from 69% - 100% of cases, and the most common malignant aetiology was adenocarcinoma.³ In this case, the only histological specimen acquired was during colonoscopy which showed highly dysplastic glands, a precancerous condition.

Various modalities have been described to diagnose intussusception in adults. In this case, CT imaging and colonoscopy were utilized, and intussusception was accurately diagnosed via CT imaging, albeit missed in colonoscopy. This correlates to the high diagnostic accuracy of CT imaging which is reported consistently by various studies, ranging from 83.3 to 91%.⁹⁻¹¹ In addition to the high diagnostic accuracy, CT imaging is also able to demonstrate the local and regional anatomy of the intussusception as well as to identify the underlying pathology causing the intussusception. The finding that can be elicited from a CT scan is the 'target sign' which was seen in our case.¹²

Colonoscopy has been reported to have a wide range of diagnostic accuracy ranging from 33% to 100% with few ad-

vantages being identified compared to other modalities.⁹⁻¹¹ Due to the high prevalence of mass as a leading point causing intussusception in adult cases, a biopsy can be performed during colonoscopy, whilst direct visualisation may assist in differentiating between benign and malignant mass. Some authors also describe the role of colonoscopic reduction of intussusception in selective cases.¹⁰ Magnetic Resonance Imaging may have similar sensitivity with CT imaging in detecting adult intussusception¹³ albeit may be limited in acute settings.¹⁴ Nonetheless, if it is associated with rectal prolapse, a dynamic MR study may provide a precise assessment of the presence of enterocele, rectocele, or anismus which are commonly linked. Dynamic MR study may help to detect pelvic floor dysfunctions as well which aid in operative planning.^{12,14}

Considering the high incidence of malignancy as the underlying pathology in adult intussusception, many have opted for surgical resection.^{6,12} In the absence of obvious signs of acute abdomen, in patients who are diagnosed with intussusception, particularly colonic type (commonly associated with leading points), it is advisable to perform a pre-operative endoscopy to confirm the presence of pathology.⁶ Reduction of an intussusception before surgical resection has been a controversial issue as this carries a risk of perforation as well as a complication during anastomosis of resected bowel, which is contributed by bowel wall oedema and inflammation. Theoretically, there are possibilities of intraluminal seeding or venous dissemination of cancerous cells as well.^{6,9,11} Whilst the reduction of intussusception carries risk as mentioned previously, this maneuver can be performed in the enteric type of bowel intussusception as the majority of pathology are benign in nature.⁹

CONCLUSION

Adult intussusception is an uncommon entity particularly the colo-colonic type which is encountered in this case report. The majority of the cases have lead points of various aetiology ranging from benign to malignant causes. CT imaging and colonoscopy are diagnostic modalities of choice. Surgical resection is indicated especially in cases where malignancy is suspected, although reduction is an option before resection in cases where benign causes are suspected particularly in the small bowel.

CONFLICT OF INTEREST

There is no conflict of interest to be disclosed by all authors.

CONSENT

Informed consent has been obtained from the patient with regards to the imaging pictures and details included in this report

REFERENCES

- 1: Kim JW, Lee BH, Park SG, Kim BC, Lee S, Lee SJ. Factors predicting malignancy in adult intussusception: An experience in university-affiliated hospitals. *Asian J Surg.* 2018;41(1):92-97. doi:10.1016/j.asjsur.2016.11.010
- 2: Alshoabi SA, Abdulaal OM. An unusual case of colonic intussusception in old age. *J Taibah Univ Med Sci.* 2019;14(2):199-202. doi:10.1016/j.jtumed.2019.02.004
- 3: Wang N, Cui XY, Liu Y, et al. Adult intussusception: A retrospective review of 41 cases. *World J Gastroenterol.* 2009;15(26):3303-3308. doi:10.3748/wjg.15.3303
- 4: Lyons D, Sidhu S. Missed case of intussusception, a rare cause of abdominal pain in adults: A case report emphasizing the imaging findings and review of the literature. *Radiol Case Rep.* 2019;14(8):906-910. doi:10.1016/j.radcr.2019.05.007
- 5: Singh RB, Dahiya RS, Singh K, et al. Sigmoido-rectal intussusception. *Indian J Gastroenterol.* 1995;14(2):75. doi:10.1177/2050313x19856242
- 6: Panzera F, di Venere B, Rizzi M, et al. Bowel intussusception in adult: Prevalence, diagnostic tools and therapy. *World J Methodol.* 2021;11(3):81-87. doi:10.5662/wjcm.v11.i3.81
- 7: Shenoy S. Adult intussusception: A case series and review. *World J Gastrointest Endosc.* 2017;9(5):220-227. doi:10.4253/wjge.v9.i5.220
- 8: Valentini V, Buquicchio GL, Galluzzo M, et al. Intussusception in adults: The role of MDCT in the identification of the site and cause of obstruction. *Gastroenterol Res Pract.* 2016;2016. doi:10.1155/2016/5623718
- 9: Tarchouli M, Ait Ali A. Adult Intussusception: An Uncommon Condition and Challenging Management. *Visc Med.* 2021;37(2):120-127. doi:10.1159/000507380
- 10: Omori H, Asahi H, Inoue Y, Irinoda T, Takahashi M, Saito K. Intussusception in adults: A 21-year experience in the university-affiliated emergency center and indication for nonoperative reduction. *Dig Surg.* 2003;20(5):433-438. doi:10.1159/000072712
- 11: Gupta RK, Agrawal CS, Yadav R, Bajracharya A, Sah PL. Intussusception in adults: Institutional review. *International Journal of Surgery.* 2011;9(1):91-95. doi:10.1016/j.ijvsu.2010.10.003
- 12: Filiberto AC, Loftus TJ, Tan SA, Read TE, Iqbal A. Sigmoido-rectal intussusception. *SAGE Open Med Case Rep.* 2019;7(2):2050313X19856242. doi:10.1177/2050313X19856242
- 13: Marsicovetere P, Ivatury SJ, White B, Holubar SD. Intestinal Intussusception: Etiology, Diagnosis, and Treatment. *Clin Colon Rectal Surg.* 2017;30(1):030-039. doi:10.1055/s-0036-1593429
- 14: Mazumdar P, Kumar P, Katiyar G, Mulla M, Sardessai S. Sigmoid carcinoma with sigmoid-rectal intussusception presenting as rectal prolapse and large bowel obstruction in the ED. *Egyptian Journal of Radiology and Nuclear Medicine.* 2021;52(1). doi:10.1186/s43055-021-00414-3