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Gastric lipomatosis: a case report

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Abstract

Gastric lipomatosis is a rare disease characterized by multiple lipomas, benign tumors which can produce a variety of symptoms according to their size. In general, the disease is incidentally documented in imaging studies done to study other diseases. Pathological findings can contribute to the certainty of diagnosis. At the moment, there is no definite treatment for small, asymptomatic masses, but surgical resection is suggested for masses that are larger than 3 or 4 cm and for those that are symptomatic.

Keywords

Gastric neoplasms, gastrointestinal endoscopy, lipoma, tomography, histology.

INTRODUCTION

Gastrointestinal lipomas are mesenchymal tumors that account for less than 3% of gastric tumors. Gastric lipomatosis is very rare, and only a few case reports are found in the literature. It is characterized by multiple gastric lipomas, by diffuse infiltration of the submucosa, or by mature adipose tissue beneath a serous membrane. There are no reports of malignant transformations. We present the case of a 65-year-old asymptomatic woman in whom multiple gastric subepithelial masses were observed. Imaging and histopathological study confirmed the diagnosis of gastric lipomatosis.

CLINICAL CASE

An asymptomatic 65-year-old woman who had previously been diagnosed with giant gastric polyps came to the gastroenterology service for an endoscopic ultrasound follow-up examination. The patient reported a history of dyslipidemia that was managed pharmacologically and said that there was no family history of lipomas. On physical examination, the only relevant findings were two lipomas in her lower extremities. The larger was located on the anterior side of her right thigh near the greater trochanter. Its diameter was approximately 4 cm. The smaller was on the posterior side of her left thigh above the popliteal fossa. Its diameter was 2 cm.

Endoscopic examination found six elevated subepithelial polypoid sessile lesions covered by healthy mucosa. They were located in the antrum and on the greater curvature of the stomach. The largest lesion measured 2.7 x 1.7 cm. Differential diagnosis required complementary studies to define medical or surgical management.

Endoscopic ultrasound identified a large lesion that was 22 mm in diameter. It originated in the submucosa and was hyperechoic and homogeneous but without internal vascular structures. Fine needle aspiration biopsy was taken found only hemorrhagic smears without epithelial or mesenchymal cells. The material was not diagnostic. Subsequently, a computerized axial tomography (CT) scan of the abdomen reported multiple gastric lesions located on the nodular and rounded greater curvature. Their fat density was (-100 HU) which corresponded to multiple lipomas, but there was no evidence of compromised perigastric lymph nodes or abdominal or pelvic involvement. In addition, diverticular disease of the left colon without signs of inflammation was found, but there were no other lesions found (**Figure 1**).

Based on these findings, endoscopic resection of the largest lesion was performed to confirm the etiology of the lesions (**Figure 2**). Histopathological study revealed a benign mesenchymal tumor lesion located in the submucosa. It consisted of a proliferation of mature adipocytes with few fibrous septa but without cellular atypia, mitosis or necrosis (**Figure 3**). Based on these clinical findings, the treatment of choice was conservative. Routine endoscopic monitoring of gastric lesions was continued. To date, the patient has evolved satisfactorily.

DISCUSSION

Unlike single gastric lipomas which account for 3% of all benign gastric tumors, gastric lipomatosis is a rare disease, and only 12 cases have been reported in the literature. In general, gastric lipomatosis tends to be asymptomatic, and so far no cases with malignant transformations have been reported. (1-3) Gastric lipomatosis is diagnosed by findings of multiple gastric lipomas or of diffuse infiltration of adipose tissue in the submucosa or in the subserous layer of the stomach. (1, 4) Although no minimum number of lipomas has been established for this diagnosis, normally more than four lipomas is considered to be gastric lipomatosis. (5) Lipomas are soft in consistency and small in size. They have well-defined borders and are round or oval shaped. They are usually sessile, but cases of pedunculated lipomas have been reported. (6) Their most common location is the submucosa (90% -95% of cases), but 5% -10% of cases occur in the subserosa. Anatomically, they are mainly found in the antrum (75%), and there are no current reports of their presence in the cardia or pylorus (3, 7). Histologically, they consist of a proliferation of mature adipose tissue with thin fibrovascular septa surrounded by a fibrous capsule. (5, 7)

Currently, the exact etiology of gastric lipomatosis is not known. Hypotheses about their origins include embryonic displacement of adipose tissue, genetic predisposition, alterations of fat metabolism, fat deposits after chemotherapy and chronic irritation. (1, 7) In a number of cases, gastric lipomatosis has been associated with multiple familial lipomatosis, a rare benign genetic disease whose estima-

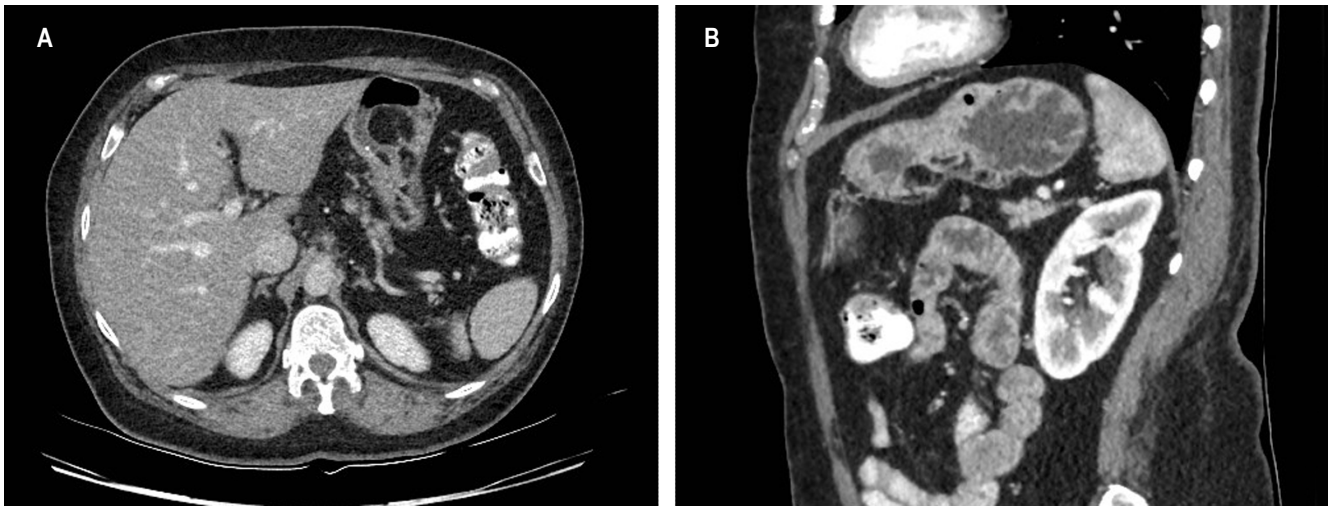

Figure 1. Abdominal CT scan showing multiple nodular and round lesions with fat density (-100 HU) in transmural submucosal location along the greater curvature of the stomach. **A.** Axial view. **B.** Sagittal view.

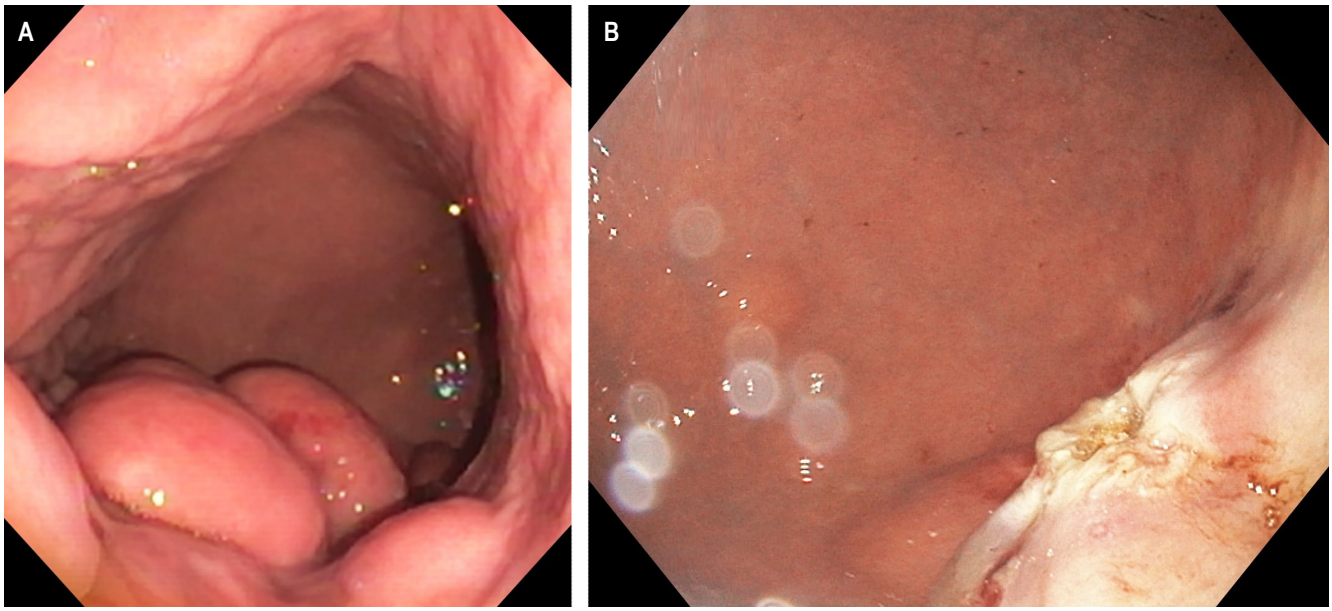

Figure 2. Endoscopy. **A.** Endoscopy showing multiple elevated submucosal lesions covered by healthy mucosa in the greater curvature of the stomach. **B.** Resection of the larger lesion.

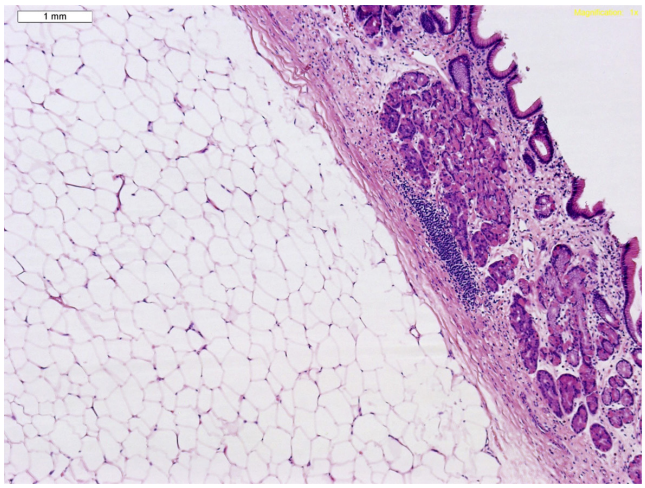

Figure 3. H&E X 20. Histological findings show tumor comprised of proliferation of mature adipose tissue, without cellular atypia, mitosis, or necrosis located in the gastric submucosa.

ted prevalence in the general population is 0.002%. (8-11) Usually, patients present multiple lipomas in the subcutaneous adipose tissue of the extremities and trunk from the third and fourth decades of life but experience no pain. (11, 12) Some studies have reported patients with concomitant dyslipidemia whose lipid profiles may appear to be unaltered. (13, 14) In general, this disease is autosomal dominant, although cases of recessive inheritance have also been reported. (8, 9, 13) To date, no specific mutation for multiple familial lipomatosis has been identified, but several genetic and karyotype studies have reported associations with mutations in mitochondrial DNA, in the PALB2 gene (partner and BRCA2 gene locator) and in the HMGA2 gene. (12, 14-17)

Gastric lipomatosis usually does not cause symptoms and is found incidentally in autopsies or in clinical studies for other entities. (3) When patients present symptoms, they are mainly related to masses larger than 2 to 4 cm. (3, 18) The most common clinical presentation is gastrointestinal bleeding (50%) which may be associated with epigastric pain, nausea, and vomiting. These obstructive symptoms generally appear early in the disease and are more frequent when the lipomas are located in the antrum or are pedunculated lipomas that cause intussusception of the stomach. (1-3, 6) Gastric hemorrhaging can occur due to ulceration of the mucosa by lipomas produced by venous stasis when lipomas are large. It can also be secondary to inflammation which makes the mucosa more susceptible to ischemia. (2, 19) Gastrointestinal bleeding can be acute or chronic, so clinical studies should be expanded given that patients may develop anemia and iron deficiency.

Currently, an abdominal CT scan is the imaging tool of choice since lipomas have a specific pattern given by their

homogeneous structures, regular shapes, absence of infiltrative growth and characteristic fat density of -80 to -120 Hounsfield units (HU). When soft tissue basilar strands are seen in a smooth lipoma in a CT scan, it suggests an ulcer in the lesion. (4, 18, 20) Magnetic resonance imaging is also useful for identifying lipomas due to its high sensitivity for detecting adipose tissue. MRI is indicated for children and patients who are allergic to contrast medium. (3)

In endoscopy, three signs suggest the presence of a lipoma: the tent sign, the pillow sign, and protrusion of fat through the mass when multiple biopsies are taken. The tent sign is the arrangement of the gastric folds towards the lesion while the pillow sign refers to the tactile sensation of pressing a sponge. (2, 3) One limitation of biopsies taken during endoscopy is that they may not obtain an appropriate quantity of fatty tissue from the submucosa. (7, 21) Another diagnostic tool, endoscopic ultrasound, allows evaluation of the layer where these tumor originate. Endoscopic biopsies of the submucosa can also be taken during this procedure. (2, 4, 22)

There is still no agreement or established standard treatment guidelines for gastric lipomatosis because these lesions are asymptomatic and have a very low incidence. Some authors suggest that the treatment plan should be based on the size of the lesion and the symptoms that the individual patient presents. For small and asymptomatic masses, periodic monitoring of lesions is suggested while surgical resection is recommended for masses measuring more than three or four cm and for symptomatic masses since they can lead to later complications. There is no consensus as to whether or not prophylactic surgery should be performed for small and asymptomatic masses. (1, 2, 7)

CONCLUSION

Gastric lipomatosis is a very unusual condition. We have presented the case of an asymptomatic woman with no family history of lipomas who was found to have multiple gastric subepithelial masses diagnosed during endoscopy and then was found to have lipomas in her extremities. Imaging characterization and endoscopic resection confirmed the diagnosis. This differential diagnosis should be taken into account when gastric subepithelial masses are found.

REFERENCES

1. Jeong IH, Maeng YH. Gastric lipomatosis. J Gastric Cancer. 2010;10(4):254-8. https://doi.org/10.5230/jgc.2010.10.4.254
2. Alberti D, Grazioli L, Orizio P, Matricardi L, Dughi S, Gheza L, Falchetti D, Caccia G. Asymptomatic giant gastric lipoma: What to do? Am J Gastroenterol. 1999;94(12):3634-7. https://doi.org/10.1111/j.1572-0241.1999.01391.x
3. López-Zamudio J, Leonher-Ruezga KL, Ramírez-González LR, Jiménez GR, González-Ojeda A, Fuentes-Orozco C. Lipoma gástrico pediculado. Reporte de caso. Cir y Cir. 2015;83(3):222-6. https://doi.org/10.1016/j.circir.2015.05.005
4. Aoyama S, Ami K, Fukuda A, Imai K, Chong J-M, Ando M. Gastric lipomatosis treated by total gastrectomy: a case report. Surg Case Reports. 2017;3(1):126. https://doi.org/10.1186/s40792-017-0404-1
5. Liu X, Wilcox CM, Nodit L, Lazenby AJ. Multiple gastrointestinal stromal tumors and lipomatosis. Arch Pathol Lab Med. 2008;132(11):1825-9.
6. Peabody JW, Ziskind J. Lipomatosis of the stomach A case report and a review of the literature. Ann Surg. 1953;138(5):784-90. https://doi.org/10.1097/00000658-195311000-00017
7. Juan F, Gallego JI, Gómez C, Guirau MD. Lipoma gástrico: un nuevo caso y revisión bibliográfica. Radiologia. 2001;43(6):300-2. https://doi.org/10.1016/S0033-8338(01)76980-9
8. Arabadzhieva E, Yonkov A, Bonev S, Bulanov D, Taneva I, Ivanova V, Dimitrova V. A rare combination between familial multiple lipomatosis and extragastrointestinal stromal tumor. Int J Surg Case Rep. 2015;14:117-20. https://doi.org/10.1016/j.ijscr.2015.07.027
9. D'Ettorre M, Gniuli D, Guidone C, Bracaglia R, Tambasco D, Mingrone G. Insulin sensitivity in familial multiple lipomatosis. Eur Rev Med Pharmacol Sci. 2013;17(16):2254-6.
10. Leffell DJ, Braverman IM. Familial multiple lipomatosis: Report of a case and a review of the literature. J Am Acad Dermatol. 1986;15(2):275-9. https://doi.org/10.1016/S0190-9622(86)70166-7
11. Djuric-Stefanovic A, Ebrahimi K, Sisevic J, Saranovic D. Gastroduodenal lipomatosis in familial multiple lipomatosis. Med Princ Pract. 2017;26(2):189-91. https://doi.org/10.1159/000454714
12. Lee CH, Spence RAJ, Upadhyaya M, Morrison PJ. Familial multiple lipomatosis with clear autosomal dominant inheritance and onset in early adolescence. BMJ Case Rep. 2011;2010-2. https://doi.org/10.1136/bcr.10.2010.3395
13. Keskin D, Ezirmik N, Celik H. Familial multiple lipomatosis. IMAJ. 2002;4:1121-3.

14. Sayar I, Demirtas L, Gurbuzel M, Isik A, Peker K, Gulhan B. Familial multiple lipomas coexisting with celiac disease: A case report. J Med Case Rep. 2014;8(1):1-4. https://doi.org/10.1186/1752-1947-8-309
15. Reddy N, Malipatil B, Kumar S. A rare case of familial multiple subcutaneous lipomatosis with novel PALB2 mutation and increased predilection to cancers. Hematol Oncol Stem Cell Ther. 2016;9(4):154-6. https://doi.org/10.1016/j.hemonc.2016.01.001
16. Prontera P, Stangoni G, Manes I, Mencarelli A, Donti E. Encephalocraniocutaneous lipomatosis (ECCL) in a patient with history of familial multiple lipomatosis (FML). Am J Med Genet Part A. 2009;149A(3):543-5. https://doi.org/10.1002/ajmg.a.32692
17. Vaughan CJ, Weremowicz S, Goldstein MM, Casey M, Hart M, Hahn RT, Devereux RB, Girardi L, Schoen FJ, Fletcher JA, Morton CC, Basson CT. A t(2;19)(p13;p13.2) in a giant invasive cardiac lipoma from a patient with multiple lipomatosis. Genes Chromosom Cancer. 2000;28(2):133-7. https://doi.org/10.1002/(SICI)1098-2264(200006)28:2<133::AID-GCC1>3.0.CO;2-K
18. Taylor J, Stewart T, Dodds J. Gastrointestinal lipomas: A radiologic and pathologic review. Am J Roentgenol. 1990;155(December):1205-10. https://doi.org/10.2214/ajr.155.6.2122666
19. Skinner MS, Broadaway RK, Grossman P, Seckinger D. Multiple gastric lipomas. Dig Dis Sci. 1983;28(12):1147-9. https://doi.org/10.1007/BF01295816
20. Ferrozzi F, Tognini G, Bova D, Pavone P. Lipomatous tumors of the stomach: CT findings and differential diagnosis. J Comput Assist Tomogr. 2000;24(6):854-8. https://doi.org/10.1097/00004728-200011000-00006
21. Ventura L, Leocata P, Guadagni S, Ventura T. Multiple gastric lipomas: Report of an asymptomatic case found at autopsy. Pathol Int. 1997;47(8):575-7. https://doi.org/10.1111/j.1440-1827.1997.tb04543.x
22. Dias de Castro F, Magalhães J, Monteiro S, Leite S, Cotter J. The Role of Endoscopic Ultrasound in the Diagnostic Assessment of Subepithelial Lesions of the Upper Gastrointestinal Tract. GE Port J Gastroenterol. 2016;23(6):287-92. https://doi.org/10.1016/j.jpge.2016.05.001