MEDDOCS Open Access Publisher

Journal of Surgery Case Reports

Open Access | Case Report

A Case of Appendiceal Neurofibroma Presenting As Appendicitis

Tasneem Farag[1]; Reem Ali[2]*; Jane Kim[3]; Jessica Wassef[3]

[1]Ain Shams University, Faculty of Medicine, Cairo, Egypt.

[2]Cairo University, Faculty of Medicine, Cairo, Egypt.

[3]Department of Surgery, Hackensack Meridian Health Palisades Medical Center, North Bergen, NJ & Englewood Hospital and Medical Center, Englewood, NJ.

***Corresponding Author(s): Reem Ali**

Cairo University, Faculty of Medicine, Cairo, Egypt.

Email: reemelsayedali03@gmail.com

Received: July 11, 2024

Accepted: July 23, 2024

Published Online: July 30, 2024

Journal: Journal of Surgery Case Reports

Publisher: MedDocs Publishers LLC

Online edition: http://meddocsonline.org/

Keywords: Appendiceal neurofibroma; Mucocele; Appendectomy.

Abstract

Intra-abdominal neurofibromatosis is an exceedingly rare diagnosis constituting a challenge for clinicians in diagnosis and management. With only a few cases reported worldwide, there is no consensus on management protocol. Because appendiceal neurofibromas are benign, surgical excision is the main therapeutic option, and the prognosis is usually good. However, continuous monitoring and vigilance are required due to the risk of recurrence or connection with malignancy, especially in patients with neurofibromatosis type 1 (NF1). This case emphasizes how crucial a comprehensive histological investigation is in detecting these tumors, considering its large impact on prognosis and therapy.

Introduction

Benign peripheral nerve sheath tumors known as neurofibromas are primarily linked to neurofibromatosis type 1 (NF1), a hereditary condition caused by NF1 gene mutations on chromosome 17 [1]. Usually, these tumors originate from the skin, subcutaneous tissue, and nerves. However, they are extremely unusual to form in the gastrointestinal tract, especially in the appendix, with only a few examples reported in the medical literature [2,3]. This case report aims to contribute to the limited pool of knowledge surrounding appendiceal neurofibromas by discussing the clinical presentation, diagnostic challenges, and potential implications for patient management.

The appendix, a vestigial organ extending from the cecum, is more commonly associated with inflammatory conditions such as appendicitis or neoplasms like carcinoid tumors and mucinous neoplasms [4,5]. Due to the rarity of neurofibromas in this area, diagnosis can be difficult and frequently results in delayed identification or misdiagnosis [6,7].

Our report describes a case of an appendiceal neurofibroma in a patient known to have NF1 and highlights the necessity for a differential diagnosis that encompasses unusual entities with known NF1. The pathophysiology of appendiceal neurofibromas is still poorly known due to their rare incidence. There are theories that these tumors could come from the appendix's autonomic nervous system fibers, but more investigation is required to determine the precise cause of these tumors and any possible genetic correlations [8]. In addition to contributing to the scant literature on appendiceal neurofibromas, this case report highlights the significance of taking these uncommon tumors into account when making a differential diagnosis, particularly in patients who appear with unusual gastrointestinal

Cite this article: Farag T, Ali R, Kimm J, Wassef J. A Case of Appendiceal Neurofibroma Presenting as Appendicitis. J Surg Case Rep. 2024: 2(2); 1007.

symptoms. The comprehensive clinical and pathological insights offered here are intended to improve comprehension and treatment of this uncommon entity within the medical field.

Case presentation

A 51-year-old female with past medical history of NF1, gastrointestinal esophageal reflux disease, triple negative breast cancer status post chemotherapy and bilateral mastectomy with reconstruction, presented with nausea, vomiting, and abdominal pain. Notably, she has had multiple previous presentations with similar episodes. Prior endoscopies revealed gastritis. CT abdomen pelvis with oral contrast revealed circumferential mural thickening of the appendix suggesting appendiceal mucocele vs Plexiform Neurofibroma (PN). Due to the uncertainty of the diagnosis, a decision was made to convert to laparoscopic hand-assisted ileocecectomy to prevent rupture of the appendix & obtain adequate margins. Upon inspection of the appendix during the operation, it was found to be severely dilated at the base without inflammation or perforation. Final pathology revealed an appendiceal PN ~14.8cm staining positive for S-100 with negative margins.

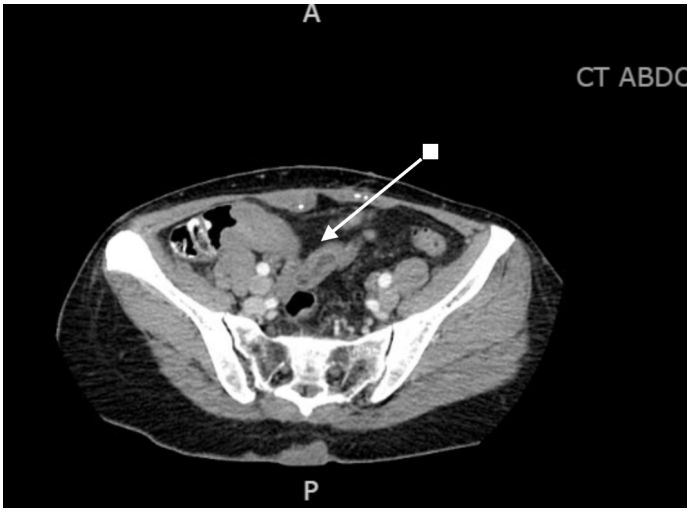

Figure 1: CT showing circumferential mural thickening of the appendix.

Discussion

Neurofibromatosis type 1, also known as von Recklinghausen's disease, is an inherited neurocutaneous syndrome affecting one in every 2,500-3,000 births in an autosomal dominant fashion [9]. It is caused by mutations of the NF1 gene, a tumor suppressor of the ras oncogene signaling pathway coding for neurofibromin protein. In addition to the characteristic central nervous system and cutaneous manifestation of NF1 (café-au-lait spots, cutaneous neurofibromas, Lisch nodules and axillary and inguinal freckling), up to 25% of patients will develop intra-abdominal neoplastic manifestations [10]. This underscores the importance of keeping appendiceal neurofibromas in the differential diagnosis when handling a known case of NF1 presenting with abdominal symptoms [11]. Besides the appendix, the small intestine, retroperitoneum, and colon could be involved [12].

There are three subtypes of neurofibromas: localized, diffuse, and plexiform neurofibroma (PN). PNs, have up to 5% transformation into malignant peripheral nerve sheath tumors (MPNST), a soft tissue sarcoma that is high grade with a propensity for distant metastasis [13].

Presentation of abdominal neurofibromas is widely variable and depends on tumor location, pressure effect on nearby organs, and focal or diffuse nature of the neoplasm. Patients may present with abdominal pain, change in bowel habits (constipation or diarrhea), abdominal swellings or full-blown intestinal obstruction [14-18].

The differential diagnosis included appendiceal mucocele which requires an appendectomy. In patients suspected of having Low-Grade Appendiceal Mucinous Neoplasm (LAMN) laparoscopic cecectomy rather than laparoscopic appendectomy is preferred to obtain a negative resection margin. LAMNs are characterized by low-grade cytologic atypia and the absence of destructive invasion [19]. Pseudomyxoma peritonei may develop from the peritoneal dissemination of these tumors. As a result, LAMNs are classified by the 2010 World Health Organization as low-grade adenocarcinomas. The optimal surgical approach for patients with LAMNs is still debatable. Additional surgery is usually indicated when a tumor involves a surgical margin [20]. On the other hand, Arnason et al. found that involvement of the appendectomy margin by either neoplastic epithelium or acellular mucin was not linked to disease recurrence or peritoneal dissemination in patients with appendiceal LAMNs without mucin discharge or exposure of the appendiceal serosa [21]. PN of the appendix is treated by appendectomy or oncological right hemicolectomy due to risk of malignant changes at the root of the appendix and upstaging to MPNST.

An NF1-related appendiceal tumor is challenging to diagnose preoperatively. Colonoscopy of the appendix rarely detects tumors through the appendiceal orifice, making it difficult to collect tissue samples for histopathological diagnosis. Therefore, appendiceal tumors are often treated with surgical resection, which serves as both a diagnostic and a therapeutic procedure. [22]. The operative standard of care remains unclear with surgery, radiation, and monitoring being the main lines of management. The FDA has approved selumetinib for treatment of inoperable neurofibromas with 70% of cases seeing a 20-60% reduction in tumor size [23].

Conclusion

Patients with NF1 require special attention, as up to 25% of them may develop intra-abdominal neoplastic manifestations. Given the significant risk, surgical intervention is recommended to prevent symptoms associated with mass effect and to reduce the risk of malignant transformation. While oncological resections are an option, achieving negative margins during surgery may be sufficient to minimize the risk of local recurrence. It is crucial for healthcare providers to monitor these patients closely, and to employ a multidisciplinary approach to manage any neoplastic developments effectively. Early detection and timely surgical intervention can significantly improve patient outcomes and quality of life.

References

1. Neurofibromatosis Type 1. Genetics Home Reference, NIH. 2023. https://ghr.nlm.nih.gov/condition/neurofibromatosis-type-1.

2. Lee SY, Park JY, Kim KH. A Rare Case of Appendiceal Neurofibroma Presenting as Appendicitis. International Journal of Surgery Case Reports. 2021; 85: 106134, https://doi.org/10.1016/j.ijscr.2021.106134.

3. Misdraji J.Appendiceal Mucinous Neoplasms: Controversial Issues. Archives of Pathology & Laboratory Medicine. 2009; 134(6): 864-870, https://doi.org/10.1043/1543-2165-134.6.864.

4. McGory ML, et al. Palliative Management of Locally Advanced Appendiceal Adenocarcinoma: Cytoreduction with Intraperitoneal Chemotherapy. Annals of Surgical Oncology. 2005; 12(9): 769-774. https://doi.org/10.1245/ASO.2005.02.014.

5. Scherübl H, Jensen RT, Eckel F. Neoplasms of the Appendix: Clinical Features, Diagnosis, and Management. The Surgical Clinics of North America. 2018; 98(5): 1019-1031, https://doi.org/10.1016/j.suc.2018.06.006.

6. Barton JG, Blitz BF, Fay AM. Neurofibromatosis and Cancer: Differential Diagnosis and Management of Tumors. The American Journal of Surgical Pathology. 2008; 32(4): 480-490, https://doi.org/10.1097/PAS.0b013e31815702ea.

7. Weiss SW, Goldblum JR. Enzinger and Weiss's Soft Tissue Tumors. 5th ed. Mosby. 2008. https://www.elsevier.com/books/enzinger-and-weisss-soft-tissue-tumors/weiss/978-0-323-04620-3.

8. Kaliszewski K, Szymendera S, Nogalski A. Neurofibromas of the Gastrointestinal Tract: A Report of 10 Cases and Review of the Literature. Polish Journal of Pathology. 2019; 70(4): 231-238, https://doi.org/10.5114/pjp.2019.89959.

9. Spurlock G, Griffiths S, Uff J, Upadhyaya M. Somatic alterations of the NF1 gene in an NF1 individual with multiple benign tumors (internal and external) and malignant tumor types. Familial Cancer. 2007; 6(4): 463-471. https://doi.org/10.1007/s10689-007-9150-0

10. Phillips TG, Persia OR, Jimenez Lopez JA. Neurofibromatosis type 1: More than skin deep. The Journal of Family Practice. 2020; 69(8): 401-405.

11. Dare AJ, Gupta AA, Thipphavong S, Miettinen M, Gladdy RA. Abdominal neoplastic manifestations of neurofibromatosis type 1. Neuro-oncology advances. 2020; 2(Suppl 1): i124-i133. https://doi.org/10.1093/noajnl/vdaa032

12. Agaimy A, Vassos N, Croner RS. Gastrointestinal manifestations of neurofibromatosis type 1 (Recklinghausen's disease): Clinicopathological spectrum with pathogenetic considerations. International Journal of Clinical and Experimental Pathology. 2012; 5(9): 852-862.

13. Louis DN, Ohgaki H, Wiestler OD, Cavenee WK, Burger PC, Jouvet A, et al. The 2007 WHO classification of tumours of the central nervous system. Acta neuropathologica. 2007; 114(2): 97-109. https://doi.org/10.1007/s00401-007-0243-4

14. Boldorini R, Tosoni A, Leutner M, Ribaldone R, Surico N, et al. Multiple small intestinal stromal tumors in a patient with previously unrecognized neurofibromatosis type 1: Immunohistochemical and ultrastructural evaluation. Pathology. 2001; 33(4): 390-395.

15. Charagundla SR, Levine MS, Torigian DA, Campbell MS, Furth EE, et al. Diffuse intestinal ganglioneuromatosis mimicking Crohn's disease. AJR American Journal of Roentgenology. 2004; 182(5): 1166-1168.

16. Kim HR, Kim YJ. Neurofibromatosis of the colon and rectum combined with other manifestations of von Recklinghausen's disease: Report of a case. Diseases of the Colon & Rectum. 1998; 41(9): 1187-1192.

17. Hirata K, Kitahara K, Momosaka Y, Kouho H, Nagata N, et al. Diffuse ganglioneuromatosis with plexiform neurofibromas limited to the gastrointestinal tract involving a large segment of small intestine. Journal of Gastroenterology. 1996; 31(2): 263-267.

18. Urschel JD, Berendt RC, Anselmo JE. Surgical treatment of colonic ganglioneuromatosis in neurofibromatosis. Canadian Journal of Surgery. 1991; 34(3): 271-276.

19. Bosman FT, Carneiro F, Hruban RH, Theise ND. Eds. WHO Classification of Tumours of the Digestive System. 4th ed. IARC Press. 2010.

20. Komo T, Oishi K, Kohashi T, Hihara J, Yoshimitsu M, et al. Appendiceal neurofibroma with low-grade appendiceal mucinous neoplasm in neurofibromatosis type 1 patient: A case report. International Journal of Surgery Case Reports. 2018; 53: 377-380. https://doi.org/10.1016/j.ijscr.2018.11.005

21. Arnason T, Kamionek M, Yang M, Yantiss RK, Misdraji J. Significance of proximal margin involvement in low-grade appendiceal mucinous neoplasms. Archives of Pathology & Laboratory Medicine. 2015; 139(4): 518-521.

22. Shimizu T, Hondo N, Miyagawa Y, Kitazawa M, Muranaka F, et al. A case of appendiceal ganglioneuroma in neurofibromatosis type 1. Surgical Case Reports. 2021; 7(1): 218. https://doi.org/10.1186/s40792-021-01299-0

23. Ferner RE, Huson SM, Thomas N. Guidelines for the diagnosis and management of individuals with neurofibromatosis 1.Journal of Medical Genetics. 2007; 44(2): 81-88.