

# Fluorodeoxyglucose Positron Emission Tomography Findings in a Case of Peritoneal Tuberculosis

© Gökçe Yavan<sup>1\*</sup> © Pinar Pelin Özcan<sup>2</sup> © Zehra Pinar Koç<sup>3</sup> © Adil Gümüş<sup>4</sup> © Şevki Gökşun Gökulu<sup>5</sup>

\*Corresponding Author

<sup>1,2,3,4</sup>Mersin University, Faculty of Medicine, Department of Nuclear Medicine, Mersin, Turkey

<sup>5</sup>Mersin University, Faculty of Medicine, Obstetrics and Gynecology, Mersin, Turkey

## Abstract

In many cases with diffuse peritoneal disease, Fluorodeoxyglucose positron emission tomography/Computed tomography (FDG PET/CT) is an auxiliary imaging test in the diagnosis. In her history, we aimed to present the FDG PET/CT findings of a 57 year-old women with newly developed abdominal distension and diagnosed as tuberculous peritonitis.

**Keywords:** tuberculosis, extrapulmonary, peritoneal, FDG, PET/CT.

## Introduction

The incidence of tuberculous peritonitis is between 0.1% and 0.7%, and it has been reported that it constitutes only 2% of all causes of ascites (1). Although the incidence of the disease in men and women is similar, most cases are observed between the ages of 21 and 45. It usually develops from active pulmonary tuberculosis (TB) by hematogenous spread. Rarely, it occurs after direct spread of TB bacilli from neighboring organs such as the intestine or adnexa. (2) Poverty, overcrowding, HIV co-infection, and drug resistance increase rates of intra-abdominal and gastrointestinal TB (3). Non-specific features of the disease can create difficulties in terms of diagnosis (4-6). PET/CT findings may also be confused with other pathologies such as malignancies progressing with peritoneal carcinomatosis (7-12).

## Case Report

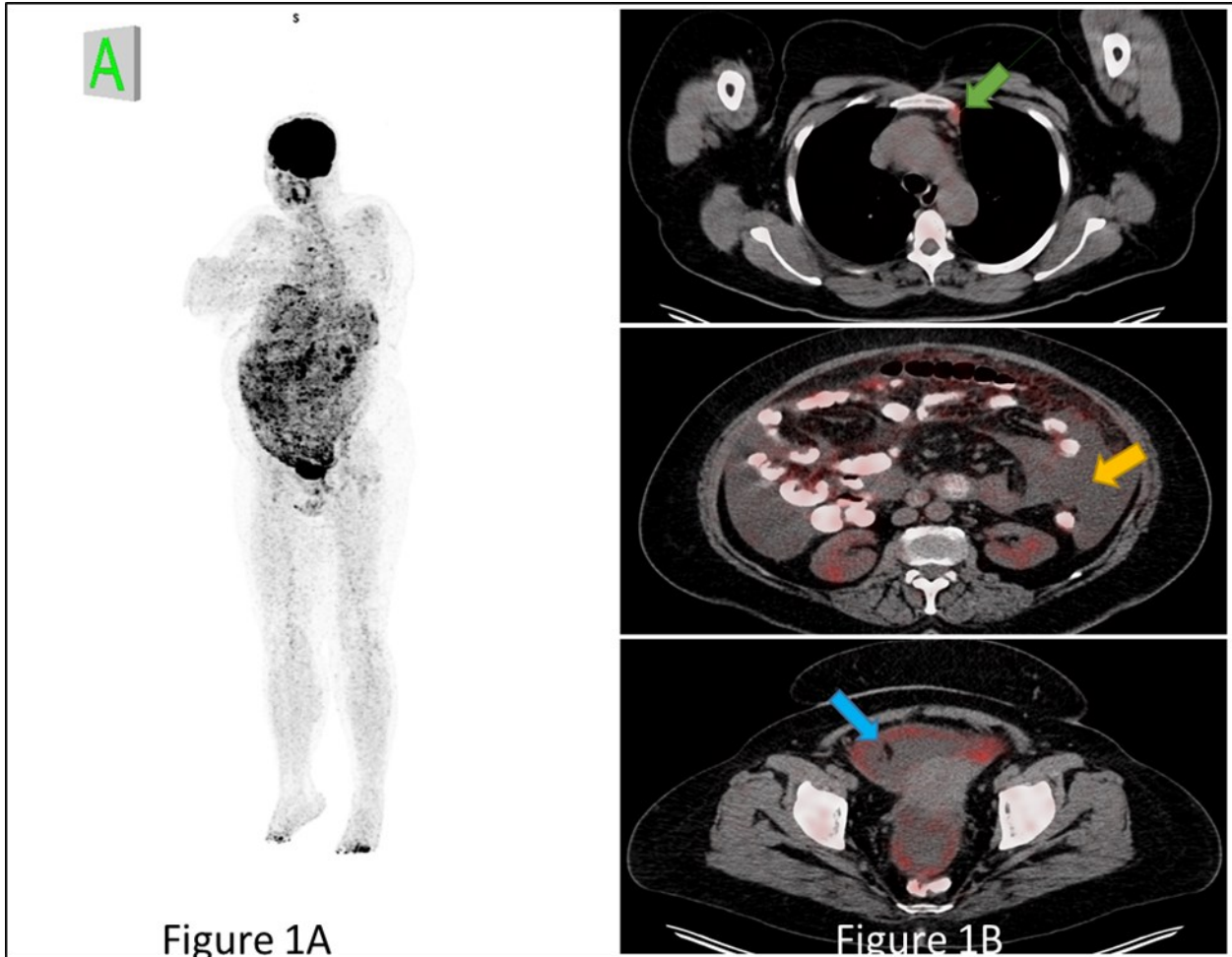
A 57-year-old women was admitted to the gastroenterology outpatient clinic with the complaint of newly developed abdominal swelling. In his history, it was learned that the patient had been operated for hernia 6 months ago. Abdominal examination revealed findings consistent with ascites and mild tenderness. In the ultrasound examination, findings that may be compatible with peritoneal carcinomatosis and diffuse free fluid

**Address for Correspondence:** Gökçe Yavan, Mersin University Training and Research Hospital, Clinic of Nuclear Medicine, Mersin, Turkey

**Phone:** + 90-324-2410000/22522-22523 **E-mail:** gyavan95@gaill.com **ORCID ID:** orcid.org/0000-0002-7332-6293 **Received:**

**08.08.2023 Accepted: 06.09.2023 Published: 13.09.2023**

in the abdomen were detected. The patient was referred to the obstetrics clinic to investigate a possible gynecological malignancy. PET/CT examination revealed massive ascites in the perihepatic, perisplenic, interloop and pelvic regions, diffuse hypermetabolic thickening and heterogeneity on the peritoneal surfaces. Diagnostic laparoscopy was planned for the patient, as the findings were found to be compatible with peritoneal carcinomatosis. Frozen result after diagnostic laparoscopy was reported as consistent with granulomatous infection. Quadruple anti-tuberculosis treatment was planned for the patient whose quantiferon test was positive.



**Figure 1.:** Left anterior oblique MIP (maximum intensity projection) image of diffuse peritoneal involvement in 1A. Axial PET/CT cross-sectional images in 1B, green arrow shows lymph node in the left parasternal region, yellow arrow shows diffuse peritoneal fluid, blue arrow shows areas of peritoneal hypermetabolic thickening.

## Discussion

The differential diagnosis of this presented entity includes the diseases such as lymphoma, gynecological pathologies, other intestinal infectious causes with mesenteric lymphadenopathy, stomach, colon, small intestine malignancies, Crohn's disease, both clinically and imaging findings (13,14,15). In conclusion, the case we presented emphasizes that abdominal tuberculosis should be included in the differential diagnosis of a patient who presented with the clinic of ascites and presenting with diffuse peritoneal involvement in PET/CT imaging. It should always be kept in mind that extrapulmonary tuberculosis can be seen frequently in regions with a high incidence of tuberculosis, such as our country.

**Peer-review:** Externally peer-reviewed.

## Authorship Contributions

**Concept:** G.Y., P.P.O., **Design:** G.Y., Z.P.K., **Supervision:** G.Y., P.P.O., Z.P.K., A.G., S.G.G., **Data Collection and/or Processing:** G.Y., P.P.O., Z.P.K., A.G., S.G.G., **Analysis and/or Interpretation:** G.Y., P.P.O., Z.P.K., A.G., S.G.G., **Literature Review:** G.Y., **Writer:** G.Y.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study has received no financial support.

## References

- Aslan M., Uyar N., Uyanıkoğlu A., (2020) A case of peritoneal tuberculosis presenting with acid in the abdomen. *Maltepe Medical Journal*, 13(2), s. 70-73. <https://doi.org/10.35514/mtd.2021.51>
- Kaya M. Uçmak F. Tuberculous peritonitis. *Current gastroenterology* 14.2 (2010): 90-95.
- Rasheed, S., Zinicola, R., Watson, D., Bajwa, A. and McDonald, P.J. (2007), Intra-abdominal and gastrointestinal tuberculosis. *Colorectal Disease*, 9: 773-783. <https://doi.org/10.1111/j.1463-1318.2007.01337.x>
- Kattan, J., Haddad, F. G., Menassa-Moussa, L., Kesrouani, C., Daccache, S., Haddad, F. G., & Atallah, D. (2019). Peritoneal Tuberculosis: A Forsaken Yet Misleading Diagnosis. *Case reports in oncological medicine*, 2019, 5357049. <https://doi.org/10.1155/2019/5357049>
- Ankrah, A.O., van der Werf, T.S., de Vries, E.F.J. et al. PET/CT imaging of Mycobacterium tuberculosis infection. *Clin Transl Imaging* 4, 131–144 (2016). <https://doi.org/10.1007/s40336-016-0164-0>
- Akdogan, R., Halil Rakici, A. A., Güngör, S., Bedir, R., & Akdogan, E. (2018). F-18 Fluorodeoxyglucose Positron Emission Tomography/ Computed Tomography Findings of Isolated Gastric Tuberculosis mimicking Gastric Cancer and Lymphoma. *Euroasian journal of hepato-gastroenterology*, 8(1), 93–96. <https://doi.org/10.5005/jp-journals-10018-1270>
- Tian, G., Xiao, Y., Chen, B., Guan, H., & Deng, Q. Y. (2010). Multi-site abdominal tuberculosis mimics malignancy on 18F-FDG PET/CT: report of three cases. *World journal of gastroenterology*, 16(33), 4237–4242. <https://doi.org/10.3748/wjg.v16.i33.4237>
- Hutomo, F., Yudistiro, R., Mulyanto, I.D. et al. False positive finding from malignancy-like lesions on FDG PET/CT: case report of tuberculosis patients. *BMC Med Imaging* 20, 26 (2020). <https://doi.org/10.1186/s12880-020-00427-w>
- Chen, R., Chen, Y., Liu, L., Zhou, X., Liu, J., & Huang, G. (2016). The Role of <sup>18</sup>F-FDG PET/CT in the Evaluation of Peritoneal Thickening of Undetermined Origin. *Medicine*, 95(15), e3023. <https://doi.org/10.1097/MD.0000000000003023>
- Wang, S. B., Ji, Y. H., Wu, H. B., Wang, Q. S., Zhou, W. L., Lv, L., Shou, T., & Hu, J. (2017). PET/CT for differentiating between tuberculous peritonitis and peritoneal carcinomatosis: The parietal peritoneum. *Medicine*, 96(2), e5867. <https://doi.org/10.1097/MD.0000000000005867>

11. Di Renzo, C., Tabrizian, P., Kozuch, D. E., Fiel, M. I., & Schwartz, M. E. (2020). Abdominal Tuberculosis Mimicking Cancer Clinically and on Fluorodeoxyglucose (FDG)-Positron Emission Tomography (PET) Imaging: A Two-Case Series. *The American journal of case reports*, 21, e918901. <https://doi.org/10.12659/AJCR.918901>
12. Inanir, S., & Engur, C. O. (2020). Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography Imaging in Pseudo Sister Mary Joseph's Nodule. *Indian journal of nuclear medicine : IJNM : the official journal of the Society of Nuclear Medicine, India*, 35(1), 66–67. [https://doi.org/10.4103/ijnm.IJNM\\_164\\_19](https://doi.org/10.4103/ijnm.IJNM_164_19)
13. Jiandani, F. P., Somalwar, S., Bhalerao, A., Jain, S., & Rao, S. (2023). Encysted Peritoneal Tuberculosis Masquerading as Ovarian Tumour: A Case Report. *Cureus*, 15(6), e39956. <https://doi.org/10.7759/cureus.39956>
14. Choudhury, A., Dhillon, J., Sekar, A., Gupta, P., Singh, H., & Sharma, V. (2023). Differentiating gastrointestinal tuberculosis and Crohn's disease- a comprehensive review. *BMC gastroenterology*, 23(1), 246. <https://doi.org/10.1186/s12876-023-02887-0>
15. Gong, Y., Li, S., Rong, R., Chen, X., & Jiang, L. (2019). Isolated gastric varices secondary to abdominal tuberculosis mimicking lymphoma: a case report. *BMC gastroenterology*, 19(1), 78. <https://doi.org/10.1186/s12876-019-0998-9>

---

© Author(s) 2022. This work is distributed under <https://creativecommons.org/licenses/by-sa/4.0/>

