Progressive Disseminated Adenoid Cystic Carcinoma as shown by follow up 18Flourine Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography: a rare case report

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https://doi.org/10.71286/moi.1696329

Abstract

The Adenoid Cystic Carcinoma of the head and neck usually presents with lung metastasis in case of distant spread. There are also several case reports about other metastatic sites including kidney, brain and bone. However this is the first case with disseminated disease involvement including multiple skin lesions all over the body with follow up 18 F FDG PET/CT images.

Keywords: Disseminated carcinoma :adenoid cystic, positron emission tomogrophy computed tomography , fluorodeoxyglucose.

Introduction

Adenoid cystic carcinoma is the malignant tumor of the head and neck presenting as approximately 10% of the salivary gland tumors (1). The distant metastatic lesions usually present in the lungs, bones, liver and brain accordingly (2). However, there are atypical sites of primary presentations including larynx in previous reports as well as other unusual metastatic sites presented as renal lesions (3-5). This report presents the disseminated adenoid cystic carcinoma with involvement of the breasts and multiple skin lesions as well as recurrence determined by 18F FDG PET/CT.

Case Report

75 year old female patient with diagnosis of adenoid cystic carcinoma was referred for 18F FDG PET/CT which revealed right parotidal mass lesion (Fig. 1a) with multiple lymph node and lung metastasis (Fig. 1b) and additional multiple skin lesions (Fig. 1c) including breasts intraabdominal lesions and lymph nodes as well as recurrent tumor was determined at the at the five months follow up pointing dissemination and progression after treatment with sorafenib.

Figure 1



Discussion

Although adenoid cystic carcinoma is the primary salivary gland tumor there have been determined cases from the other primary sites (6, 7) and primary unknown tumors (8). Among the metastatic sites lung is the most common presentation but conflicting results exists about the FDG avidity of these lesions (9). Thus there is ungoing research with imaging of this tumor by other radiopharmaceuticals. A comparative analysis was performed in a patient presented with primary unknown tumor with hepatic metastasis showed positive 18F FAPI-42 results in primary submandibular gland lesion without FDG uptake (10). Another case report of two patients supported the higher 68Ga FAPI-04 accumulation in lesions in comparison with FDG (11). Another radiopharmaceutical 68Ga PSMA showed promising results in a case with suggestion of the 177Lu PSMA treatment (7). A prospective study comparing 68Ga PSMA and 18F FDG PET/CT demonstrated that there might be additional brain and meningeal metastasis that could not be determined by FDG imaging (12). The report of two cases supported performance of 68Ga PSMA PET/CT over 18F FDG with determination of second primary tumor incidentally (13). Finally, a recent study was conducted with additional treatment results with comparison of two radiopharmaceuticals and concluded that these patients might benefit from 177Lu PSMA treatment as another case report (14, 15). Besides higher accumulation of other radiopharmaceuticals and therapeutic options 18F FDG PET/CT has the documented role in imaging of this tumor as well as multiple

studies indicating prognostic role (16, 17). Although there are unusual case reports including breast, hypophysis and bone metastasis (18, 19) this is the report of exceptional case with disseminated involvement firstly in the literature as shown by 18F FDG PET/CT.

References

- Jang, S., Patel, P. N., Kimple, R. J., & McCulloch, T. M. (2017). Clinical Outcomes and Prognostic Factors of Adenoid Cystic Carcinoma of the Head and Neck. Anticancer research, 37(6), 3045–3052. https://doi.org/10.21873/anticanres.11659
- Moghrabi, S., Al-Muhtaseb, A., Alshatti, M. Y., & Al-Ibraheem, A. (2025). Fluoro-2-Deoxyglucose (FDG)-Avid Adenoid Cystic Carcinoma of the Larynx: A Rare Case and Diagnostic Insight Obtained Using Positron Emission Tomography/Computed Tomography (PET/CT) Imaging. Cureus, 17(2), e78816. https://doi.org/10.7759/cureus.78816
- 3. Lee, R. H., Wai, K. C., Chan, J. W., Ha, P. K., & Kang, H. (2022). Approaches to the Management of Metastatic Adenoid Cystic Carcinoma. Cancers, 14(22), 5698. https://doi.org/10.3390/cancers14225698
- 4. Yao, Y., & Huang, R. (2022). Exceptional renal metastasis from adenoid cystic carcinoma of nasopharynx seen on 18F-FDG PET/CT. Hellenic journal of nuclear medicine, 25(2), 220–221. https://doi.org/10.1967/s002449912484
- Zhao, Q., Dong, A., Ye, H., & Zuo, C. (2022). 99mTc-MIBI SPECT/CT and FDG PET/CT in Isolated Bilateral Renal Metastases From Adenoid Cystic Carcinoma of the Maxilla. Clinical nuclear medicine, 47(2), e205–e207. https://doi.org/10.1097/RLU.00000000003872
- 6. Gray, B. C., Gellatly, M. J., & Oldan, J. D. (2024). Metastatic Adenoid Cystic Carcinoma of the Bartholin Gland. Clinical nuclear medicine, 49(8), e425–e427. https://doi.org/10.1097/RLU.00000000005329
- Sandach, P., Seifert, R., Slama, A., Theegarten, D., & Hautzel, H. (2023). Histological Validation of FDG and PSMA-Targeted PET/CT Imaging in a Rare Tracheal Adenoid Cystic Carcinoma. Clinical nuclear medicine, 48(1), e16–e18. https://doi.org/10.1097/RLU.00000000004441
- Liang, Z., Ding, Y., Sui, H., Wu, M., Jin, Y., & Wen, W. (2024). Identification of hepatic metastasis from an unrevealed adenoid cystic carcinoma by PET/CT: A case report. Medicine, 103(38), e39769. https://doi.org/10.1097/MD.00000000039769
- Otsuka, K., Otsuka, M., Matsunaga, T., Hirano, T., Abe, M., Osoegawa, A., Sugio, K., Daa, T., & Asayama, Y. (2024). Low FDG uptake in lung metastasis despite high FDG uptake in a primary adenoid cystic carcinoma of a sublingual gland. Radiology case reports, 19(8), 3195–3199. https://doi.org/10.1016/j.radcr.2024.04.037
- Wang Z, Liu Z, Zhuang L, Yin W, Zhao Y, Dong M. Case report: [(18)F]FAPI-42 PET/CT visualize primary adenoid cysticcarcinoma not detected by [(18)F]FDG. Am J Nucl Med Mol Imaging. 2024 Apr 25;14(2):157-160.
- 11. Civan, C., Isik, E. G., Has Simsek, D., Buyukkaya, F., & Kuyumcu, S. (2023). Utility of 68 Ga-FAPI-04 PET/CT in Adenoid Cystic Carcinoma Compared With 18 F-FDG PET/CT : Two Case Reports. Clinical nuclear medicine, 48(7), e350–e352. https://doi.org/10.1097/RLU.00000000004687
- Shamim, S. A., Kumar, N., Arora, G., Kumar, D., Pathak, A., Thakkar, A., Sikka, K., Singh, C. A., Kakkar, A., & Bhalla, A. S. (2023). Comparison of 68Ga-PSMA-HBED-CC and 18F-FDG PET/CT in the Evaluation of Adenoid Cystic Carcinoma-A Prospective Study. Clinical nuclear medicine, 48(11), e509–e515. https://doi.org/10.1097/RLU.00000000004868
- Isgoren, S., Hekimsoy, T., Koroglu, E., & Demir, H. (2022). PET/CT With 68Ga-PSMA and 18F-FDG in Metastatic Adenoid Cystic Carcinoma: Report of 2 Cases. Clinical nuclear medicine, 47(5), e423–e424. https://doi.org/10.1097/RLU.00000000004106
- 14. Wang, G., Zhou, M., Zang, J., Jiang, Y., Chen, X., Zhu, Z., & Chen, X. (2022). A pilot study of 68 Ga-PSMA-617 PET/CT imaging and 177Lu-EB-PSMA-617 radioligand therapy in patients with adenoid cystic carcinoma. EJNMMI research, 12(1), 52. https://doi.org/10.1186/s13550-022-00922-x
- Has Simsek, D., Kuyumcu, S., Agaoglu, F. Y., & Unal, S. N. (2019). Radionuclide Therapy With 177Lu-PSMA in a Case of Metastatic Adenoid Cystic Carcinoma of the Parotid. Clinical nuclear medicine, 44(9), 764–766. https://doi.org/10.1097/RLU.00000000002645

- 16. Sun, X., Gu, W., Yuan, H., Wang, S., Yang, Y., Evangelista, L., Zhang, L., & Jiang, L. (2022). Clinical use of 18F-FDG PET/CT in the differential diagnosis of patients with primary and secondary adenoid cystic carcinoma of the lung: a retrospective cohort study. Translational lung cancer research, 11(8), 1643–1656. https://doi.org/10.21037/tlcr-22-509
- 17. Lim, W. S., Oh, J. S., Roh, J. L., Kim, J. S., Kim, S. J., Choi, S. H., Nam, S. Y., & Kim, S. Y. (2018). Prediction of distant metastasis and survival in adenoid cystic carcinoma using quantitative 18F-FDG PET/CT measurements. Oral oncology, 77, 98–104. https://doi.org/10.1016/j.oraloncology.2017.12.013
- 18. Sürer Budak, E., Yıldırım, Ş., Yıldız, S., Öner, A. O., & Gündüz, Ş. (2017). Two Uncommon Sites of Metastasis: Breast and Hypophysis Metastases of Head and Neck Adenoid Cystic Carcinoma Detected by FDG PET/CT. Baş Boyun Adenoid Kistik Karsinomlu Olguda İki Olağan Dışı Metastaz Alanı: Hipofiz ve Meme. Molecular imaging and radionuclide therapy, 26(3), 120–123. https://doi.org/10.4274/mirt.06025
- 19. Tewari, A., Padma, S., & Sundaram, P. S. (2013). Detection of atypical metastases in recurrent adenoid cystic carcinoma of parotid gland. Journal of cancer research and therapeutics, 9(1), 148–150. https://doi.org/10.4103/0973-1482.110374

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