19 days after PET/CT. Aggressive lymphomas exhibit intense FDG uptake, often with a high tumor burden. This can elevate blood lactate levels, which would become an alternative energy substrate for the brain and, by competition, reduce FDG uptake, as suggested by Yi HK et al (2). This is also described in individuals engaged in intense exercise, where decreased FDG uptake may be attributed to potential lactate utilization by the brain (3). The relatively preserved FDG uptake in the basal ganglia could be viewed as a physiological protective mechanism in response to reduced glucose availability for the brain. The oldest parts of the brain are vital for survival and must be preserved to maintain essential life functions. Despite being an organ with one of the highest glucose demands, the brain lacks the ability to store metabolic products for later use. Therefore, during competition with neoplastic cells for the available energy substrate, metabolic redistribution could contribute to preserving essential brain functions. **Conclusion:** Patients with high tumor burden due to Hodgkin's lymphoma may exhibit not only a global reduction in cerebral glucose uptake but also a redistribution of glucose consumption from the neocortex to older brain structures which are essential for survival.

Keywords: 18F-FDG PET/CT, Brain, Hipometabolism, Lymphoma.

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COMPARISON OF PET/CT IMAGES WITH 18F-FDG AND 18F-PSMA-1007 IN METASTATIC ACRAL MELANOMA: A CASE REPORT

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Introduction/Justification: Acral melanoma (AM) is a rare form of cutaneous melanoma and affects acral areas such as the palms, soles, and nails. AM is associated with a worse prognosis compared to other subtypes of cutaneous melanoma, possibly due to its aggressiveness and tendency for metastasize. Despite the advances in surgical techniques, radiotherapy, and molecular targeted therapy/immunotherapy, new treatment modalities for patients with AM is highly desirable to improve survival rates. Staging and restaging AM patients with positron emission computed tomography with 18F-FDG (FDG PET/CT) is essential to detect nodal and distant metastasis in these high-risk patients. However, 18F-FDG cannot be used as a theranostic radiopharmaceutical. The possibility of investing in a theranostic approach to these patients is desirable and radiolabeled PSMA may be a potential tool. Here, we present a patient with AM, which progressed with brain and lung metastases, and highlights the importance of PET/CT images performed with 18F-FDG and 18F-PSMA-1007 (PSMA PET/CT) for the identification of metastases and with potential theranostic approach for this challenge disease. **Report:** D. R.M., a 50-year-old male rural worker, sought medical assistance due to a dark skin lesion with progressive growth in the third left toe in January 2023. The biopsy reveals AM. In September 2023, the patient underwent amputation of the third and fourth left toes and left ilioinguinal lymphadenectomy due to melanoma suspicion; histopathological analysis confirmed melanoma with vertical growth and deep invasion into the dermis as well as lymph node metastases. In January 2024, he presented a reduction in level of consciousness and intense headaches. Cranial magnetic resonance imaging (MRI) revealed multiple brain metastasis with sizes ranging from 0.6 to 4.6 cm, significant swelling, edema, and midline shift. The patient underwent restaging FDG PET/CT and PSMA PET/CT, with a 24-hour interval between studies. FDG PET/CT identified mild metabolism in the brain metastases detected by MRI and no extracranial metastases. On the other hand, PSMA PET/CT impressively identified all brain metastases detected by MRI (with SUVs ranging from 8 to 11) with uptake higher and more extensive than 18F-FDG uptake and no extracranial metastases. At this moment, the patient was admitted to the hospital for neurological symptom control with dexamethasone. **Conclusion:** This case highlights the importance of comparing FDG PET/CT and PSMA PET/CT in assessing patients with AM. PSMA PET/CT emerges as a promising diagnostic imaging modality for detecting distant metastasis in AM, especially brain metastases since PSMA is not normally taken up by the central nervous system. PSMA is extremely avid for AM metastases, rendering this imaging modality highly sensitive for diagnostic purposes, helping guide therapeutic planning. PSMA may be a potential theranostic tool in specific cases. **Acknowledgements:** The study was supported by Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), Fundação de Apoio ao Ensino e à Pesquisa do Estado de São Paulo (Cancer Theranostics Innovation Center, CEPID FAPESP #2021/10265-8), and International Atomic Energy Agency (IAEA) technical cooperation projects for development of Latin American Countries (IAEA/TCLAC: EXBRA6033-2401375).

Keywords: Acral melanoma, FDG PET/CT, PSMA scan.

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DMSA-99mTc SPECT/CT AND DTPA-99mTc IMAGES IN CROSS FUSED RENAL ECTOPIA: A CASE REPORT

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Introduction/Justification: Crossed fused renal ectopia is a rare congenital anomaly resulting from embryological alterations, in which the ectopic kidney is contralateral to the insertion of its ureter into the bladder. This condition is generally asymptomatic, however, it is associated with renal complications and is usually found incidentally in radiological and molecular imaging studies. There are few reports in the literature demonstrating the combined results of molecular imaging and hybrid studies of this condition. This study aims to demonstrate the findings of static renal scintigraphy with 99mTc-DMSA, including SPECT/CT images, and dynamic renal scintigraphy with 99mTc-DTPA in a patient with crossed fused renal ectopia. **Report:** A 54-year-old female patient was diagnosed with stage IVa squamous cell carcinoma of the cervix causing right hydronephrosis due to extrinsic obstruction, requiring the placement of a double-J catheter. During the investigation, the patient was submitted to renal scintigraphy with 99mTc-DMSA, with SPECT/CT images, and dynamic renal scintigraphy with 99mTc-DTPA. Static images were obtained in the anterior, posterior, anterior and posterior obliques, and lateral abdominal projections and SPECT/CT images after 3 hours of intravenous injection of 99mTc-DMSA. A left ectopic kidney fused to the right kidney was observed, located to the right of the midline. Tubular function was normal in the left kidney and markedly decreased in the right kidney. Bilateral renal scars were detected. After 5 days, sequential images were acquired at intervals of 2 seconds for 1 minute and every 15 seconds for 25 minutes, in the anterior and posterior abdominal projections, immediately after intravenous injection of 99mTc-DTPA, with additional images after furosemide intravenous injection. Markedly decreased glomerular function was observed in the right kidney, and normal function in the left kidney, with signs of crossed fused renal ectopia (left ectopic kidney) and pyelocalyceal dilation on the right, with obstructive pattern. **Conclusion:** Crossed fused renal ectopia is a rare condition. Scintigraphy images with 99mTc-DMSA and 99mTc-DTPA allow accurate evaluation of the various functional alterations of the kidneys resulting from this anomaly. Obtaining SPECT/CT images with 99mTc-DMSA contributes to the good correlation between functional and anatomical changes of the disease. 99mTc-DMSA and 99mTc-DTPA images are also useful for evaluation of tubular and glomerular renal function in crossed fused renal ectopia. Additionally, the anatomical and functional correlation with the hybrid SPECT/CT method enables the evaluation of abnormalities with more precision.

Keywords: 99mTc-DMSA, 99mTc-DTPA, Crossed fused ectopia.

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TREATMENT OF REFRACTORY MULTIPLE MYELOMA WITH PSMA-177LU: A CASE REPORT

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Introduction/Justification: Triple-refractory multiple myeloma (MM) has a poor prognosis. It is a neoplasm with marked genomic heterogeneity, and recently, our group demonstrated marked uptake of 68Ga-PSMA-11 in some patients, suggesting the potential theranostic use of PSMA in selected cases (1). Herein, we report the initial treatment with 177Lu-PSMA in a patient with refractory MM. **Report:** A 76-year-old male patient with IgA/Kappa MM refractory to 6 therapeutic lines, including daratumumab, lenalidomide, and bortezomib, underwent PET/CT with 18F-PSMA-1007, showing marked tracer uptake in multiple osteolytic lesions, several with extensive soft tissue components. A PET/CT with 18F-FDG was also performed, revealing similar findings. A first dose of 7,400 MBq (200 mCi) of 177Lu-PSMA-I&T was administered. The procedure was well tolerated, with slight clinical improvement observed in the week following the infusion. Visual analysis of whole-body scans performed at 21h, 30h, and 7 days demonstrated moderate tracer uptake, lower than that observed with 18F-PSMA-1007. There was slight washout between images at 21h and 30h and moderate/significant washout after 7 days. After 4 weeks, PET/CTs with 18F-PSMA and 18F-FDG were repeated, showing similar findings to the initial scans, with a slight reduction in tracer uptake in some lesions. There was also an increase in the volume of some soft tissue lesions, attributed to post-treatment inflammation. The patient received a second dose of 7,400 MBq (200 mCi) of 177Lu-PSMA-I&T after 6 weeks, and whole-body scans were performed at 2h and 24h, also showing visually lower uptake compared to 18F-PSMA-1007. The patient experienced an intercurrent femoral fracture, limiting mobility for clinical evaluation and subsequent procedures, ultimately leading to their passing after a few days. **Conclusion:** This preliminary report suggests that treatment of MM with 177Lu-PSMA is feasible and well tolerated after 2 initial doses. The uptake of 177Lu-PSMA-I&T was visually lower than that of 18F-PSMA-1007, which does not seem to be solely explained by the different resolution of images obtained from different tracers and equipment. There was a slight clinical and imaging response after the first dose, out of a total of 6 planned. A fracture complication and the severity of the case prevented imaging evaluation after the 2nd dose and further treatment continuation. PSMA-177Lu therapy in MM treatment appears to be safe with an initial favorable response, albeit slight. Studies with complete treatments (6 cycles) and in clinically less severe patients are needed to assess the effectiveness of the procedure.

Keywords: Multiple myeloma, PSMA-177Lu, Theranostic.

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