HEMATOLOGY, TRANSFUSION AND CELL THERAPY

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# RELATOS DE CASOS - 17° SIMPÓSIO EDWALDO CAMARGO E 1° CONGRESSO CANCERTHERA

## OTIMIZANDO O PREPARO DO PACIENTE PARA O EXAME PET/CT POR MEIO DA TELENFERMAGEM – EXPERIÊNCIA INICIAL

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**Introdução/Justificativa:** Em muitos locais do mundo, o acesso ao exame PET/CT (tomografia por emissão de pósitrons) é extremamente difícil e muitos pacientes devem viajar longas distâncias para realizá-lo. Essa realidade pode ser encontrada no estado de Pernambuco, no nordeste brasileiro. Este estado possui pouco mais de 98000 km$^2$ e uma população estimada um pouco maior que 9,6 milhões de habitantes. Porém, apenas um equipamento de PET/CT funciona pelo sistema público de saúde neste estado, sendo localizado na capital no extremo leste. Neste contexto, entra em questão a necessidade de informar e orientar adequadamente os pacientes sobre este procedimento. Falha em fazê-lo pode levar a inutilização do procedimento diagnóstico, que muitas vezes deve ser repetido dias depois, elevando os custos relativos tanto ao procedimento em si quanto do deslocamento ou hospedagem do paciente envolvido. A telessaúde tem se mostrado uma solução promissora, destacando-se sua capacidade de reduzir custos e superar distâncias. Por exemplo, por meio de consultas e monitoramento remoto de enfermagem, pacientes podem receber atendimento de qualidade, evitando deslocamentos dispendiosos e desnecessários. Isso se torna ainda mais importante na realização de exames de alta complexidade como a PET/CT, essencial para o manejo de pacientes oncológicos. Dessa forma, a telenfermagem pode ter um impacto positivo no manejo e acesso de pacientes oncológicos ao exame PET/CT. Logo, objetivamos relatar a criação e o funcionamento de um sistema de telenfermagem para orientação de preparo de pacientes oncológicos para o exame PET/CT. **Relato:** O presente estudo foi conduzido num hospital universitário referência em Medicina Nuclear na capital pernambucana. O hospital já tinha acesso prévio a plataforma Central de Telemonitoramento Clínico (CTC- HC) e Aplicativo de Gestão dos Hospitais Universitários (AGHUx) utilizando o modulo Sistema de Telemedicina e Telessaúde. Todo o processo deste estudo foi embasado na Lei 13.709, que trata da proteção de dados. O treinamento dos profissionais de enfermagem consistiu em orientação sobre o funcionamento das plataformas de telessaúde, baseando-se em um roteiro pré-estabelecido. O sistema de consultas de telenfermagem consistiam em: agendamento dos pacientes; teleatendimento para confirmação da teleconsulta através do aplicativo Whatsapp Business e com envio de links para acesso a teleconsulta na plataforma AGHUx; teleconsultas realizadas na plataforma AGHUx/STT de forma síncrona e integrada ao prontuário eletrônico do paciente com certificado digital. Um total de 92 pacientes foram atendidos, sendo 64 mulheres (69,6%). Em relação ao município de origem, 33 (35,9%) pacientes moravam na capital e 59 (64,1%) em outras cidades. Os pacientes residiam em 27 diferentes municípios no estado. A mediana do deslocamento necessário para os pacientes do interior receberem atendimento convencional seria de 167,0 Km (IQ: 120,0 – 372,0 Km), com um valor máximo de 1140 km e mínimo de 14 km. Nenhum paciente teve preparo inadequado no exame de PET/CT. **Conclusão:** Neste relato, destacamos o potencial do uso da telenfermagem no preparo e orientação adequada de pacientes

submetidos ao exame PET/CT. Nossas análises demonstram uma grande redução do deslocamento dos pacientes. Todos os pacientes apresentaram preparo adequado no momento da realização do exame.

**Palavras-chave:** Oncologia, PET/CT, Telemedicina, Telenfermagem.

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## 177LU-PSMA AND 177LU-DOTATATE AS THERAPY ALTERNATIVES FOR METACHRONOUS TRANSDIFFERENTIATED PROSTATE AND NEUROENDOCRINE TUMORS - CASE REPORT

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**Introduction/Justification:** Prostate cancer is among the most common cancers in males. The PSMA (Prostate-Specific Membrane Antigen), a protein expressed in prostate cancer cells, has been used in the control of that cancer and can also be taken up in the neovasculature of other non-prostatic tumors, where it should may be a useful tool. In a normal prostate, the neuroendocrine (NE) cells represent a smaller population than the epithelial cells and may play a role in the regulation. In cases of prostatic adenocarcinoma, a portion of the carcinomatous cell population undergoes transdifferentiation processes, becoming cells that express NE markers related to progression and poor prognosis. The carcinoembryonic antigen (CEA) is one of the main markers for monitoring patients who have undergone transdifferentiation. Studies indicate that the transdifferentiation is often accelerated by conventional androgen deprivation therapy, leading to the progression of the cancer, which highlights the need for new therapeutic strategies. Neuroendocrine tumors (NETs) are a diverse group of neoplasms originating from NE cells present in different organs. Radioactive therapy with 177Lu-DOTA is considered an innovative approach in treating NETs, specifically targeted to tumor tissues, minimizing the impact on healthy tissues. Considering the similarities between the cells of NETs and the NE cells from prostate adenocarcinoma, this report aims to demonstrate the application of 177Lu-PSMA and/or 177Lu-DOTA in a case where metachronous tumors with NE cells exist. **Report:** Male, 73 years old, with a neuroendocrine pancreatic cancer (since 2000) being treated with Octreotide. Was diagnosed with prostatic adenocarcinoma, Gleason 4+4=8, ECIVB (T3aN0M1b) in 2021, started androgenic deprivation with Gosserelina and Zoledronato, associated with Abiraterone+Prednisone. The PSA had decreased by 98,73% with treatment, but during the evaluation, sonographic imaging demonstrated liver lesions compatible with metastatic disease and an increase in liver enzymes, which led to the suspension of Abiraterone. A 1007-PSMA-PET/CT (from 2023) with high uptake on the pancreas, liver, and multiple bone lesions led to the therapy with 177Lu-PSMA. After the first cycle of therapy, he presented a facial flush, which was solved spontaneously. After the second cycle of 177Lu-PSMA therapy, the laboratory demonstrated a significant reduction in PSA (52,4%) and Chromogranin A (58,7%), comparing before treatment. In the second PSMA-18F PET-CT (from 2024), the pancreatic mass has reduced by 30,7% and the hepatic lobes by 15,7% in comparison with the SUV from 2023. However, bone injuries have an increase of 15,8% on SUV in the thoracic spine, which leaves the doubt of flare phenomenon or disease progression. A Ga68-DOTA-PET/CT demonstrated intense uptake at the same lesions detected by PSMA-18F PET-CT. The patient has two different possibilities of radionuclide therapy. Behold, 177Lu-PSMA can be an alternative to prostate adenocarcinoma and NET dedifferentiation due to its increase in angiogenesis, demonstrated by 1007-PSMA-PET/CT and 177Lu-DOTA due to its increased uptake on neuroendocrine cells demonstrated by Ga68-DOTA-PET/CT. **Conclusion:** The case demonstrates the possibility of treating prostate and neuroendocrine tumors with 177Lu-PSMA and/or 177Lu-DOTA, depending on the pathology stage.

**Keywords:** 177Lu-DOTA, 177Lu-PSMA, Neuroendocrine tumors, Prostate cancer.

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## DEFICIÊNCIA INTELECTUAL RELACIONADA À DELEÇÃO INTERSTICIAL DO BRAÇO LONGO DO CROMOSSOMO 5, ABRANGENDO LOCUS SUPRESSOR TUMORAL DO GENE APC (ADENOMATOUS POLYPOSIS COLI), RESULTANDO EM POLIPOSE ADENOMATOSA FAMILIAR ASSOCIADA A TUMOR DESMÓIDE

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**Introdução/Justificativa:** A polipose adenomatosa familiar (PAF) é uma síndrome hereditária com padrão autossômica dominante com penetrância de quase 100%, caracterizada por múltiplos pólipos no trato gastrointestinal, predispondo ao desenvolvimento de câncer colorretal. Neste relato de caso, discutimos o diagnóstico raro relacionado à deleção intersticial do braço longo do cromossomo 5, abrangendo locus supressor tumoral do gene APC (adenomatous

polyposis coli) com os achados consequentes de PAF (polipose adenomatosa familiar), tumor desmóide e retardo mental. Abordamos a relevância do diagnóstico precoce e do aconselhamento genético em casos complexos como este. **Relato:** Um homem de 20 anos, com história de atraso de desenvolvimento mental e cariótipo alterado mostrando deleção em parte do braço longo do cromossomo 5. Durante seus 20 anos de vida, permaneceu em atendimentos pediátricos e neurológicos de rotina, além de terapias de apoio em função do retardo mental. Foi diagnosticado incidentalmente com um tumor desmóide durante herniorrafia inguinal esquerda eletiva,sendo inicialmente optado por observação. Cerca de sete meses após, apresentou desconforto abdominal progressivo por crescimento da massa abdominal. Foi submetido à ressecção cirúrgica completa sem complicações. O exame anátomo-patológico revelou tumor desmóide medindo $27 \times 24 \times 19$ cm infiltrando tecido mesentérico e camada muscular entérica. Foi referenciado para acompanhamento oncológico por tumor desmóide abdominal O Interrogatório complementar identificou o histórico de dentes supranumerários. Diante do quadro relatado foi considerada a hipótese de Polipose Adenomatosa Familiar (PAF) e solicitados exames complementares. A colonoscopia revelou polipose difusa no íleo terminal, alças colônicas e reto. O painel de sequenciamento genético revelou uma variante patogênica com deleção nos éxons 1 a 16 do gene APC, confirmando o diagnóstico de PAF. O paciente foi encaminhado para avaliação quanto à realização de proctocolectomia profilática, investigação complementar por endoscopia digestiva alta e avaliação quanto à predisposição para neoplasia de tireóide. A testagem em cascata familiar também foi recomendada. **Conclusão:** Este caso ilustra a complexidade da PAF, especialmente quando associada a condições clínicas adicionais, como retardo mental e tumor desmóide. A identificação precoce desses pacientes de risco é crucial para o manejo adequado, incluindo o rastreamento precoce de tumores e o aconselhamento genético. A investigação genética revelou uma variante patogênica no gene APC. Possivelmente, o presente caso envolve a origem de novo da mutação, o que ocorre em cerca de 25% dos casos de PAF, tendo em vista que não há um histórico familiar típico para PAF. O acompanhamento a longo prazo desses pacientes e de suas famílias é essencial para o manejo adequado e para reduzir o risco de complicações relacionadas à PAF.

**Palavras-chave:** APC, Cromossomo 5, Polipose adenomatosa familiar, Retardo mental, Tumor desmóide.

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## TRATAMENTO BEM-SUCEDIDO DE PACIENTE COM DIAGNÓSTICO DE VIPOMA METASTÁTICO COM TRATAMENTO TERANÓSTICO OCTREOTATO-DOTA-177 LUTÉCIO

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**Introdução/Justificativa:** Os Vipomas são tumores neuroendócrinos raros do pâncreas, caracterizados pela produção excessiva de peptídeo intestinal vasoativo (VIP), levando a diarreia aquosa, desequilíbrios eletrolíticos, desidratação e consequentes graves complicações potenciais. O tratamento convencional envolve a terapia com análogos de somatostatina e cirurgias. No entanto, a disponibilidade irregular de medicamentos pode comprometer o controle da doença. **Relato:** Um homem de 56 anos apresentou-se com diarreia intensa, perda de peso significativa e desidratação. Exames revelaram hipocalemia grave, elevação de enzimas pancreáticas e escórias nitrogenadas renais. O tratamento de urgência envolveu terapia renal substitutiva, reposição eletrolítica, com recuperação completa do quadro clínico. A tomografia computadorizada (TC) de abdome total evidenciou um tumor neuroendócrino em cauda pancreática medindo 4 centímetros com metástases hepáticas, linfonodais e peritoneais. Iniciou-se tratamento empírico com Octreotida de liberação rápida, resultando em melhora sintomática significativa. A investigação complementar revelou dosagem de VIP 79,5 pmol/l (valor de referência até 30 pmol/l), ressonância de sela túrcica e dosagem de paratormônio normais. A cirurgia de debulking foi realizada para diagnóstico e citoredução tumoral, confirmando o diagnóstico de tumor neuroendócrino grau 2 com extensão para órgãos adjacentes. Após irregularidade do fornecimento do análogo de somatostatina de longa duração, o paciente retornou a apresentar sintomatologia com risco elevado de complicações agudas. Optou-se pela terapia teranóstica com Octreotato-Dota-177Lutécio (Lu) devido a sua eficácia comprovada para terapia de tumores neuroendócrinos gastroenteropancreáticos bem diferenciados com expressão comprovada para receptores de somatostatina. O paciente permaneceu em uso regular mensal de análogo de somatostatina durante cinco anos. Desde então continua assintomático, últimas tomografias realizadas sem evidência de recidiva ou de doença mensurável. **Conclusão:** O tratamento com Octreotato-Dota-177Lu em um paciente com vipoma metastático demonstrou eficácia na ausência de acesso regular a análogos de somatostatina de longa duração. Este caso destaca a importância de alternativas terapêuticas em contextos em que a disponibilidade de medicamentos é limitada, resultando em controle da doença e melhora significativa na qualidade de vida do paciente. A terapia com Octreotato-Dota-177Lu mostrou-se uma opção viável e eficaz em casos semelhantes, merecendo consideração em pacientes com dificuldades de acesso a tratamentos convencionais.

**Palavras-chave:** Octreotato, Pâncreas, Somatostatina, Tumor neuroendócrino, Vipoma.

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## 18-PET/CT IN THE DIAGNOSIS AND RESPONSE EVALUATION OF DISSEMINATED HISTOPLASMOSIS IN AN IMMUNOCOMPETENT PATIENT - CASE REPORT

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**Introduction/Justification:** Histoplasmosis is the 5th most common opportunistic fungal disease in Brazil, caused by Histoplasma capsulatum, affecting mainly the extremes of age and immunocompromised patients (HIV or use of immunosuppressive medication/glucocorticoids). The fungus has a natural habitat in soil rich in bird and bat excrement, and therefore, its main form of transmission is through inhalation. In some situations, this disease can occur in previously healthy patients with no known comorbidities or exposures, as is the case in the current report. In these situations, diagnosis becomes extremely challenging due to the wide variability of possible pathologies that can present with nonspecific symptoms, jeopardizing diagnostic confirmation and appropriate therapy. This study aims to demonstrate the usefulness of PET-CT in cases like this and to highlight its fundamental role in guiding the case and appropriate management. **Report:** Female, white, 11 years old, without comorbidities or previous surgeries, started experiencing fever, myalgia, and edema in the lower limbs in August 2022. After months of investigations, consultations with doctors from different specialties, and unsuccessful treatments, she underwent a PET/CT scan. The 18F-FDG PET/CT exams showed hypermetabolism in several lymph nodes, enlarged lymph nodes, and bony focal areas. With these findings, a biopsy of the lymph node tissue of the right internal mammary chain was performed, where the diagnosis of histoplasmosis was obtained, allowing for appropriate treatment with a combination of trimethoprim-sulfamethoxazole for one year and corticosteroid therapy for four months. In a little less than six months, evaluation of the treatment of the disease through PET-CT indicated the absence of hypermetabolic lesions, thus demonstrating the importance of PET/CT studies in the diagnostic elucidation and in the evaluation of the response to a case of histoplasmosis in an immunocompetent child, even in the absence of clinical suspicion. **Conclusion:** This case report aims to highlight the role of PET-CT (positron emission tomography-computed tomography) in identifying sites of fungal infection and guiding the locations for histopathological study. Thus, the use of PET-CT was crucial for directing biopsy and accurate diagnosis, as well as for determining the therapeutic response after initiating appropriate pharmacology.

**Keywords:** 8F-FDG PET/CT, Fever of unknown origen, Histoplasmosis.

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## PROLONGED AND INTENSE UPTAKE OF [177LU]LU-FAP-RTX IN MYOEPITHELIAL CARCINOMA: A CASE REPORT

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**Introduction/Justification:** We present a case of a 71-year-old male patient diagnosed with myoepithelial carcinoma of the pelvis and perineum, who underwent fibroblast activation protein (FAP)-directed radioligand therapy and presented long lasting tumor retention as detected by late whole-body scans. **Report:** The patient had been previously submitted to neoadjuvant radiation therapy and surgery, with tumoral relapse at the surgical margins in the gluteal region. Lesions displayed a slow and progressive sarcomatoid growth pattern, with sacral osteolytic involvement, accompanied with obturatory and left common iliac lymph node metastases. Immunotherapy was initiated but discontinued due to grade IV diarrhea. With progressive disease evident on FDG PET/CT and no other viable chemotherapy indicated, FAPI radioligand therapy was proposed, given significant tracer uptake observed in FAP-directed PET/CT. The patient received an intravenous injection of 200 mCi of [177Lu]Lu-FAP-RTX, which was well tolerated, with no acute side effects reported. Blood tests remained within normal range. Beyond partial hair loss,no other adverse events were observed. Imaging studies including whole-body planar and SPECT/CT scans revealed intense tracer retention in the sacral mass and mild to moderate retention in the lymph node metastases up to 15 days post-treatment. Notably, indicative of a response to FAP-directed radioligand therapy, there was a resolution of drainage from a fistula in the intergluteal region. Follow-up imaging is still pending at the moment. **Conclusion:** This case is the first report on favorably sustained tumor retention of the radiopharmaceutical in a carcinoma patient undergoing FAP-directed radioligand therapy. With tumor response assessment still pending, longer follow-up and detailed observation is still necessary for a better understanding of potential benefits and side effects of FAP-directed radioligand therapy, especially in patients undergoing subsequent treatment cycles.

**Keywords:** FAP, Myoepithelial carcinoma, Radioligand therapy, [177Lu]Lu-FAP-RTX.

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## THE ROLE OF PET/CT IN DETECTING OCCULT DISEASE IN SYNCHRONOUS TUMORS: A CASE REPORT OF MERKEL CELL CARCINOMA AND NON-HODGKIN LYMPHOMA

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**Introduction/Justification:** Merkel Cell Carcinoma (MCC) is a rare and aggressive cutaneous neoplasm characterized by a high tendency for recurrence and metastasis, primarily affecting older adults with fair skin. The introduction of PET/CT with 18F-FDG has significantly enhanced the diagnosis and management of MCC, providing superior sensitivity in detecting occult disease compared to computed tomography. This advancement profoundly impacts patient staging and therapeutic decisions. Similarly, non-Hodgkin lymphomas, a heterogeneous group of neoplasms originating from B cells, T cells, or natural killer cells, also benefit from PET/CT for diagnosis and follow-up, underscoring the significance of this modality in oncological practice. Herein, we present a rare case of synchronous Merkel cell carcinoma and non-Hodgkin lymphoma. **Report:** A 61-year-old male patient with a history of treated diffuse large B-cell lymphoma and multiple comorbidities presented with symptoms of progressive asthenia, night sweats without fever, weight loss, and a nodular reddish lesion on the left thigh; no palpable lymph nodes were found. Initial blood work showed pancytopenia; bone marrow biopsy did not reveal infiltration by high-grade histological non-Hodgkin lymphoma, but could not rule out focal infiltration by a low-grade histological lymphoma of immunophenotype B. Further investigation included a skin nodule biopsy, histopathologically consistent with Merkel cell carcinoma. PET/CT revealed extensive neoplastic involvement, including a retroperitoneal mass, neoplastic involvement of multiple bilateral lymph node chains, diffuse hyperdensities throughout the body, and a pulmonary nodule. Biopsy of the retroperitoneal mass confirmed low-grade non-Hodgkin lymphoma, suggesting a follicular subtype. The patient underwent resection of the Merkel cell carcinoma lesion in his thigh. A compromised deep margin was detected, warranting adjuvant radiotherapy and adjuvant chemotherapy with cisplatin + etoposide, administered concurrently with rituximab for lymphoma treatment. **Conclusion:** This case underscores the complexity of diagnosing and treating synchronous neoplasms, emphasizing the need for a multidisciplinary and individualized approach. 18F-FDG-PET/CT plays a pivotal role in detecting occult disease and assessing the extent of the conditions in this setting.

**Keywords:** Merkel cell carcinoma, Non-Hodgkin lymphoma, Occult disease, PET/CT.

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## BRAIN METABOLISM REDISTRIBUTION FROM NEOCORTEX TO PRIMITIVE BRAIN STRUCTURES IN A PATIENT WITH HODGKIN'S LYMPHOMA

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**Introduction/Justification:** We have recently demonstrated a 18F-FDG PET/CT image pattern of brain metabolic redistribution from the neocortex to evolutionary ancient brain structures during the acute phase of COVID-19 respiratory syndrome (1). We report here a patient with extensive lesions caused by Hodgkin's lymphoma whose PET/CT demonstrated changes in the cerebral distribution of FDG, with reduced uptake in the neocortex and a relative increase in the basal ganglia, similar to that observed in acute COVID-19 (1). **Report:** A 57-year-old female patient with a history of hypertension and hypothyroidism, presented with weight loss and generalized lymphadenopathy. Biopsy revealed nodular sclerosis classical Hodgkin's lymphoma subtype. 18F-FDG PET/CT was requested for staging. The images showed marked hypermetabolism in lymphadenopathy below and above the diaphragm, spleen, and bone marrow, consistent with lymphoma infiltration. Reduced radiotracer uptake was also observed in the cerebral neocortex and relatively increased uptake in the basal ganglia. Semiquantitative analysis of FDG uptake in multiple brain regions was conducted using dedicated software, and the standard deviation (SD) of brain uptake in each region was calculated compared to a normal database, using the whole brain as the reference region for normalization. Quantification revealed marked increased relative uptake in lenticular nuclei (13.7 SD), thalamus (4.6) and brainstem (3.7), and reduced uptake in the frontal, parietal, and temporal lobes (-3,9 to -0,1 SD). Before starting chemotherapy, the patient experienced weakness, multiple episodes of diarrhea, and decreased level of consciousness. She developed hemophagocytic syndrome, septic shock, and died

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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## A CONTRIBUIÇÃO DO PET-CT COM FDG-18F EM CASO COMPLEXO DE COEXISTÊNCIA DE LINFOMA E AMILOIDOSE

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**Introdução/Justificativa:** O PET-CT com FDG-18F é amplamente empregado no estadiamento inicial e avaliação de resposta terapêutica nas doenças linfoproliferativas, bem como na suspeita de recidiva. No entanto, seus achados não são específicos, já que a glicose radiomarcada identifica sítios com aumento da atividade metabólica, observados em diversas neoplasias malignas, bem como em processos inflamatórios ou infecciosos. **Relato:** Feminino, 73 anos, tratada em 2021 para linfoma linfoplasmacítico indolente, com boa resposta. Evoluiu com sintomas respiratórios recorrentes, atribuídos a processos infecciosos de repetição, apesar da terapêutica antimicrobiana prolongada. Desenvolveu manifestações orotraqueais importantes, cursando com insuficiência respiratória, resultando em traqueostomia. Propedêutica evidenciou amiloidose, sendo instituído tratamento específico, com resposta clínica favorável. Na reavaliação com médico assistente, a paciente apresentava tosse e dispneia, sendo submetida a TC de tórax que evidenciou adenomegalias mediastinais. Diante da suspeita clínica de recidiva do linfoma, solicitou-se PET-CT com FDG-18F para elucidação e definição de conduta, que mostrou aumento volumétrico e hipermetabólico das glândulas salivares maiores, consolidações pulmonares paracardíacas bilaterais acentuadamente hipermetabólicas associadas a redução volumétrica dos lobos médio e inferior esquerdo, além de linfonodos cervicais, axilares e mediastinais discretamente hipermetabólicos. Os achados do PET-CT levaram a suspeita da coexistência de: amiloidose em atividade, sobretudo no parênquima pulmonar e possivelmente nas glândulas salivares; e recidiva do linfoma nas cadeias linfonodais alteradas. Sugeriu-se, então, estudo anatomopatológico das áreas hipermetabólicas que mostrou: 1. deposição amiloide no interstício e paredes dos vasos pulmonares, fibrose estromal e infiltrado linfocítico intersticial e algo nodular de linfócitos pequenos e heterogêneos; ausência de evidências de doença linfoproliferativa; 2. doença linfoproliferativa B de pequenas células, associada a presença de acúmulos de material amiloide no interstício e paredes dos vasos na glândula submandibular esquerda e nos linfonodos cervicais ipsilaterais, consistente com linfoma da zona marginal, com acúmulo secundário amiloide. **Conclusão:** O PET-FDG tem papel bem estabelecido nas doenças linfoproliferativas, desde o diagnóstico inicial e avaliação de resposta, bem como na recidiva, podendo definir, em exame único, a extensão da doença, características metabólicas, além de sugerir sítio de biópsia. Na amiloidose este método tem sua importância, demonstrando atividade e extensão da doença. Diante da coexistência das entidades, o PET-FDG pode então definir a conduta terapêutica inicial. Comentários Finais: O caso apresentado demonstra a contribuição do PET-FDG na coexistência de doenças sistêmicas, ao indicar sítios de biópsia, demonstrar a atividade e extensão de cada uma e, assim, guiar a terapêutica inicial, decisão crítica em doenças complexas e potencialmente graves.

**Palavras-chave:** Amiloidose, Fluordesoxiglucose F18, Linfoma.

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## 18F- FDG PET/CT IN MELANOMA OF PROBABLE ANORECTAL ORIGIN: CASE REPORT

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**Introduction/Justification:** Anorectal melanoma is a rare tumor that develops in melanin producing pigment cells of the anus and rectum. As a rare entity there is not much literature regarding the management of this pathology. It`s a difficult diagnosis and the majority of patients present metastases. Therefore we presented a case of probable anorectal melanoma submitted to 18F-FDG PET/CT. **Report:** 76 years old, male with history of anal pain and sporadic bleeding after bowel movement in the last 6 months. Bowel habits of 3-4 times daily and weight loss not quantified in the period. Digital rectal examination revealed a vegetative, friable and painful lesion, found 1 cm from anal verge, in the anterior wall, extending for 3 cm and presence of blood. Colonoscopy revealed an infiltrative, multilobular, friable and non stenosing lesion, measuring 5 cm and including pectineal line and anterior wall of the anus. Biopsy revealed colorectal mucosa with atypical cellular proliferation and ulceration and immunohistochemistry demonstrated markers that confirmed the diagnosis of melanoma (primary lesion or metastatic). Chest and abdominal CT scans demonstrated lung, liver and left adrenal lesions. 18F- FDG PET/CT was performed for primary staging. PET scan revealed hypermetabolism in anorectal wall thickening, that might be the primary lesion

and in multiple hypermetabolic lesions in thyroid, lungs, liver, left adrenal, stomach lesser curvature, retroperitoneal and pelvic nodes, peritoneal implants and bones, suggesting metastatic involvement. **Conclusion:** This report shows a patient with a clinical picture, physical examination and complementary exams compatible with anorectal neoplasia. Immunohistochemistry confirms the diagnosis of melanoma. Anorectal melanomas are extremely rare and aggressive. Lymphatic dissemination of anal melanomas results in distant metastases to the liver and lungs by up to 90% of cases. These findings are in line with the FDG PET/CT reported in our study. 18F-FDG PET/CT may be useful in the primary staging of anal melanoma patients and in identifying lesions missed by other conventional radiological methods.

**Keywords:** 18F-FDG PET/CT, Anorectal, Melanoma.

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## 18F-FDG PET/CT IN ANTISYNTHETASE SYNDROME: CASE REPORT

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**Introduction/Justification:** Antisynthetase syndrome is an autoimmune pathology characterized by production of autoantibodies against aminoacyl tRNA synthetase, mainly anti-Jo-1. **Report:** Male patient presenting a clinical picture of polyarthritis in hands and wrists, periorbital edema, myositis and interstitial lung disease. FAN 1/320 (nuclear homogeneous), reactive anti Jo-1, elevated CPK, erythrocyte sedimentation rate and CRP. MRI presenting muscle edema, electroneuromyography compatible with myopathy and chest CT scan suggesting inflammatory/infectious pattern. Patient was diagnosed with antisynthetase syndrome and prednisone introduced. Later on course cyclophosphamide was added due to lung involvement. He evolved with respiratory and joint symptom improvement but with progressive worsening of muscle symptoms, characterized by proximal weakness (difficulty getting out of bed and car, daily life activities like brushing his teeths and eating). He also presented CPK rise, persistent subfebrile temperature and signs of inflammatory activity (leukocytosis and CRP rise), without any apparent focus and isolated episodes of dysphagia. Rituximabe was introduced and PET/CT scan was performed to search for the focus of the infection. PET/CT showed a diffuse pattern of muscle hypermetabolism, specially in right lower limb, suggesting a diffuse muscle inflammation without any infectious focus. **Conclusion:** Antisynthetase syndrome is a rare entity with few PET/CT reports in the literature. However PET scan appears to be very useful in the investigation of fever of unknown origin, diagnosing inflammatory activity and in response assessment evaluation.

**Keywords:** 18F-FDG PET/CT, Antisynthetase syndrome, Case report.

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## RADIOEMBOLIZAÇÃO COM ÍTRIO-90 EM METÁSTASE HEPÁTICA DE CÂNCER DO COLO DO ÚTERO. RARO CASO DE SUCESSO

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**Introdução/Justificativa:** A radioembolização interna seletiva (SIRT) é uma terapia promissora dirigida ao fígado para pacientes com câncer hepático primário e metastático. A SIRT oferece diversas vantagens sobre os métodos de tratamento tradicionais devido ao seu perfil de baixa toxicidade. A grande maioria dos estudos com aplicação intra-arterial hepática de microesferas com ítrio-90 tem sido descrita para tratamento do hepatocarcinoma e metástases hepáticas do câncer colorretal. As metástases hepáticas no câncer do colo do útero são raras, ocorrem em menos de 5% dos casos e oferecem pior prognóstico, principamente na falha dos esquemas de quimioterapia. A sobrevida global em 12 meses é de 20% e em 24 meses de 8%, com mediana de 6,8 meses. A terapia local hepática direcionada, de menor toxicicidade, para casos bem selecionados, pode retardar a progressão da doença. **Relato:** Este caso relata o histórico oncológico de uma mulher de 39 anos, com diagnóstico de carcinoma espinocelular endocervical estádio IV ao diagnóstico, com metástase pulmonar, linfonodal e hepática, submetida a conização e tratamento quimioterápico com 6 ciclos de Carboplatina + Paclitaxel e Bevacizumab. Após quimioterapia, apresentou resposta completa das lesões linfonodais e pulmonar, porém com persistência de doença ativa metastática no segmento VI do fígado ao estudo de PET/CT com 18F-FDG. Após discussão multidisciplinar, optou-se por tratamento local com ítrio-90. Paciente recebeu 1 Gbq de ítrio-90 na lesão única do segmento

VI do fígado, dosimetria realizada pelo método Partition, com resposta completa e necrose da lesão tumoral. Realizou teste do PDL1, com resultado negativo. Foi mantida em tratamento com Bevacizumab (anticorpo monoclonal anti-VEGF humanizado) e o PET/CT de controle, após 3 anos e 3 meses da radioembolização não demonstra atualmente evidência de doença. **Conclusão:** Este é o segundo caso na literatura com resposta completa de metástase hepática por neoplasia do colo do útero, tratado com radioembolização hepática com ítrio-90. A aplicação deste tratamento em metástases hepáticas por diversos tumores como: mama, rim, tumores neuroendócrinos, pâncreas e ovário, tem sido reportados com bons resultados. No entanto, para o colo do útero, são muito poucos os casos descritos. A demonstração de resposta segura e satisfatória ao tratamento locorregional com radioembolização com microesferas de ítrio-90 em metástases não habituais do fígado, possibilita ampliação da indicação deste tratamento em casos bem selecionados.

**Palavras-chave:** Câncer do colo do útero metastático, Ítrio90, Radioembolização hepática.

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## DUAL-TRACER PET/CT IN MYELOFIBROSIS: A CASE SERIES ANALYSIS USING 18F-FDG AND 18F-PSMA PET/CT

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**Introduction/Justification:** Myelofibrosis, a clonal disorder of hematopoietic stem cells, is characterized by chronic bone marrow inflammation and progressive fibrosis, resulting in hypocellularity and the displacement of neoplastic cells to extramedullary organs such as the spleen and liver, leading to splenomegaly and hepatomegaly. Hematopoietic stem cell transplantation is currently the only curative treatment, with five-year survival rates ranging between 51% and 61%, underscoring the need for novel diagnostic and therapeutic strategies. In recent years, positron emission tomography combined with computed tomography (PET/CT) using 18F-fluorodeoxyglucose (18F-FDG) has emerged as a valuable tool for assessing the glycolytic activity of various neoplasms, although there are limited reports on its utility in myelofibrosis. Concurrently, interest has grown in using the prostate-specific membrane antigen (PSMA) tracer to evaluate the neoangiogenic activity of diverse neoplasms. This study aims to compare glycolytic activity and neoangiogenic activity, assessed through 18F-FDG and 18F-PSMA PET/CT imaging, respectively, in patients with myelofibrosis. **Report:** Three patients diagnosed with myelofibrosis, aged 69, 71, and 74 years, underwent PET/CT scans on consecutive days, acquired 60 minutes after intravenous administration of 0.1 mCi/kg of 18F-FDG and 90 minutes after intravenous injection of 0.1 mCi/kg of 18F-PSMA. The images were analyzed by two nuclear medicine physicians and a radiologist. The maximum standardized uptake value (SUV) of the bone marrow, as well as the SUV and dimensions of the liver and spleen, were measured. Two patients exhibited mild to moderate diffuse increased uptake of both 18F-FDG and 18F-PSMA in the bone marrow (SUV-FDG: 6.4 and 3.5; SUV-PSMA: 3.5 and 1.7). One of them displayed mild hepatomegaly (18.7 cm), and both had marked splenomegaly (21.5 and 30.3 cm). Liver and spleen uptake of 18F-FDG was close to normal in both patients (SUV-FDG: 2.4 to 3.1), while moderate uptake of 18F-PSMA was observed in these organs (SUV-PSMA: 5.6 to 8.4), at least partially physiological and expected for this radiopharmaceutical. The third patient, who had undergone splenectomy, did not exhibit significant uptake of either tracer in the bone marrow but displayed marked uptake of 18F-PSMA in the liver (SUV-PSMA = 14.8), possibly physiological, with normal 18F-FDG uptake (SUV-FDG = 3.9). **Conclusion:** Patients with myelofibrosis appear to exhibit variable degrees of glycolytic activity and neoangiogenesis in the bone marrow, as detected by PET/CT imaging with 18F-FDG and 18F-PSMA. The moderate to marked uptake of 18F-PSMA in the liver and spleen, at least partly physiological, along with the uptake in the bone marrow in some cases, may suggest a theranostic potential of this radiopharmaceutical in myelofibrosis.

**Keywords:** 18F-FDG, 18F-PSMA, Myelofibrosis, PET/CT.

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