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FDG PET/CT FINDINGS IN A GIANT CELL TUMOR OF THE DISTAL FEMUR MIMICKING HIGH-GRADE SARCOMA: DIAGNOSTIC AND METABOLIC IMPLICATIONS

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Introduction: Giant cell tumor (GCT) of bone is a benign but locally aggressive neoplasm representing about 5% of primary bone tumors, typically affecting the metaepiphyseal region of long bones in young adults. On 18F-FDG PET/CT, these lesions often show intense uptake due to the high glycolytic activity of stromal and multinucleated giant cells. This overlap with malignant sarcomas can complicate diagnosis and impact therapeutic decision-making. **Objectives:** To describe the metabolic and morphological features of a distal femoral GCT on 18F-FDG PET/CT and discuss diagnostic challenges related to its high glycolytic activity and differentiation from sarcomatous lesions. **Materials and Methods:** A 25-year-old male presented with progressive left-knee pain and swelling for six months. MRI showed an expansile metaepiphyseal lesion with cortical thinning and septations. Bone scintigraphy revealed a "doughnut" uptake pattern suggesting an aggressive yet likely benign lesion. Whole-body 18F-FDG PET/CT was performed 60 minutes after intravenous tracer injection using a dedicated hybrid scanner (BLINDING). Images were visually and semi-quantitatively analyzed using SUVmax measurement. **Results:** PET/CT demonstrated intense FDG uptake (SUVmax 15.1) in the distal femoral lesion with cortical rupture and a soft-tissue component of 11 cm, without other hypermetabolic foci. The high SUV initially raised suspicion for osteosarcoma, but histopathology revealed spindle cells and multinucleated giant cells with low mitotic activity, confirming GCT with fibrohistiocytic features. The patient underwent tumor resection and endoprosthetic reconstruction, achieving satisfactory functional recovery. **Conclusion:** GCTs may exhibit SUV values as high as those of malignant sarcomas. This finding reflects increased glycolysis in tumor stroma and osteoclast-like cells rather than true malignant transformation. Histopathologic confirmation remains essential, as FDG uptake alone cannot distinguish benign from malignant bone lesions. Recent studies demonstrate that FDG PET/CT may aid in monitoring response to denosumab therapy and detecting recurrence after surgery. Understanding this metabolic overlap is crucial for avoiding overtreatment and optimizing management in musculoskeletal oncology.

Keywords: Giant cell tumor, Positron-emission tomography, Bone neoplasms.

Conflicts of interest: Not declared.

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RIGHT PYELOCALICEAL DUPLICATION WITH FUNCTIONAL EXCLUSION OF THE LOWER MOIETY AND SIGNS OF REFLUX: APPLICATION OF 99MTC-DTPA RENAL SCINTIGRAPHY IN COMPLEX FUNCTIONAL ASSESSMENT

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Introduction: Congenital anomalies of the urinary tract account for 30–50% of chronic kidney disease causes in the pediatric population. Pyelocaliceal duplication is one of the most frequent malformations and may present with ureteral ectopia, obstruction, or vesicoureteral reflux (VUR), directly affecting renal function. Dynamic renal scintigraphy with 99mTc-DTPA plays a key role in evaluating glomerular function and diuretic response, particularly in complex cases such as the one reported here, in which vesicoureteral reflux on the right side was demonstrated during the excretory phase. *Materials and methods*: A 16-year-old patient with right pyelocaliceal duplication, a history of grade IV right-sided VUR, multiple urologic surgeries, recurrent urinary tract infections, and stage 3A chronic kidney disease. 99mTc-DMSA scintigraphy revealed functional asymmetry (right kidney 21%, with lower moiety exclusion) and bilateral cortical scars. Dynamic renal scintigraphy with 99mTc-DTPA showed reduced arterial flow and function in the upper moiety and absence of function in the lower moiety. Partial tracer retention was observed up to the 25th minute in both kidneys, with good response to furosemide. During the late dynamic phase, vesicoureteral reflux of the tracer to the right lower moiety became evident, accentuated after diuretic administration. *Discussion*: Diuretic-enhanced dynamic renal scintigraphy with 99mTc-DTPA is considered the gold standard for evaluating upper urinary tract obstruction. As the tracer is purely glomerularly filtered, it allows functional and excretory drainage assessment. Studies show that about 10% of patients with complete