Article published online: 2023-01-04

F18-FDG PET/CT in a patient with Antisynthetase Syndrome

F18-FDG-PET/CT bei einem Patienten mit Antisynthetase-Syndrom

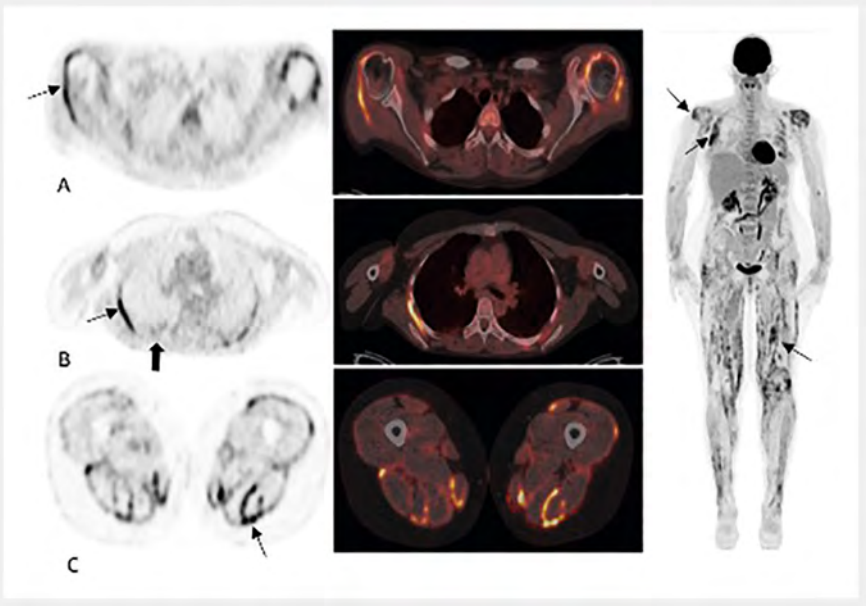
OPEN ACCESS

Introduction

More prevalent in women than men, Antisynthetase Syndrome is rare and poorly defined autoimmune disease associated with interstitial lung disease, polymyositis, and dermatomyositis. In addition to a variety of diagnostic tools, imaging modalities are needed in certain situations. A 42-year-old woman with Anti-Jo-1-positive Antisynthetase Syndrome presented with thoracic muscular pain. She underwent whole-body Fluorodeoxyglucose positron emission tomography/computed tomography (FDG PET/CT) in order to evaluate the total extent of the muscles affected. Depicting symptomatic symmetric myositis of the intercostal muscles, the examination additionally revealed unusually extensive fasciitis of the lower extremities.

Case Report

A 42-year-old woman presented with the history of unknown muscle pain, especially in the thighs and upper arms during pregnancy. Due to placental infarction a caesarean section was performed. Afterwards, a muscle biopsy revealed endomysal inflammation of the striated muscles as well as elevated anti-Jo-1-antibody confirming the suspected polymyositis. Therapy with cortisone, methotrexate and tacrolimus was started, which did not bring any improvements. Six years later, the patient experienced an onset of shortness of breath with hardly any improvement on inhalation therapy. Lung function was stabilized under belimumab therapy. Recently, the patient developed pains in shoulders and arms, paravertebral muscles and the chest wall with worsening during nighttime and morning stiffness. Thorax and shoulder Magnet Resonance Imaging (MRI) were indecisive. F18-FDG PET/CT examination was then requested to assess the extension of disease. ▶ **Fig. 1** showed bilateral muscular tracer uptake affecting the shoulder rotator cuff, synovia of both shoulder joints and the dorsolateral intercostal musculature, consistent with myositis (A and B, arrows). Additionally, PET/CT demonstrated significant bilateral fascial uptake of the lower extremity and the left knee joint (C, arrow). No marked tracer uptake of the large arterial walls was detected. Transversal images depicted extensive bilateral tracer uptake along the fascial compartments of the hip and thigh muscles particularly in the hamstring muscles consistent with fasciitis. A faint patchy FDG activity in the dorsal of the lungs confirmed the known lung involvement (B, block arrow). An incisional biopsy of the left thigh was performed. Macroscopy revealed chronic-active inflammatory changes with ligamentous fibrosis. Immunohistochemistry showed predominantly CD4-positive T-lymphocytic inflammatory infiltrates.



▶ **Fig. 1** PET with corresponding fusion PET/CT image with F18-FDG of upper thorax including shoulder rotator cuff, synovia of both shoulder joints **A** and of dorsal patchy affection of the disease with intercostal muscle involvement **B** and extended involvement of the lower extremities **C**;.

Discussion

Antisynthetase Syndrome is a rare and poorly defined autoimmune disease associated with interstitial lung disease, polymyositis, and dermatomyositis [1, 2, 3, 4, 5, 6]. MRI can help differentiating fatty muscle lesions from inflammatory changes; however, the ability to perform a whole-body examination is restricted. Therefore F18-FDG can be useful in patients with inflammatory muscle diseases and allows FDG uptake measurement with Standardized Uptake Value (SUV) for a base-line diagnostic and therapy response [2]. There are very few cases reporting unusual pattern of FDG uptake in the muscle and fascia in inflammatory muscle diseases [3, 4, 5, 6]. The pattern of FDG uptake similar to our patient's was reported with either focal or lymph node involvement [7, 8]; however in the presented case patchy lung tracer uptake along with longitudinal muscle and fascia inflammation corresponded to all manifestations of the disease.

Conflict of Interest

The authors declare that they have no conflict of interest.

Authors

Tina Nazerani-Zemann, Susanne Stanzel, Christian Gstettner, Reingard Maria Aigner, Birgit Pernthaler

Radiology, Division of Nuclear Medicine, Medizinische Universität Graz, Graz, Austria

Corresponding author

Tina Nazerani-Zemann
Radiology, Division of Nuclear Medicine
Medizinische Universität Graz
Graz
Austria
tina.nazerani-zemann@medunigraz.at

References

[1] Fukamatsu H, Hirai Y, Miyake T et al. Clinical manifestations of skin, lung and muscle diseases in dermatomyositis positive for anti-aminoacyl tRNA synthetase antibodies. J Dermatol 2019; 46: 886–897. doi:10.1111/1346-8138.15049

[2] Matuszak J, Blondet C, Hubelé F et al. Muscle fluorodeoxyglucose uptake assessed by positron emission tomography–computed tomography as a biomarker of inflammatory myopathies disease activity. Rheumatology 2019; 58: 1459–1464. doi:10.1093/rheumatology/kez040

[3] Bains S, Reimert M, Win AZ et al. A Patient with Psoriatic Arthritis Imaged with FDG-PET/CT Demonstrated an Unusual Imaging Pattern with Muscle and Fascia Involvement: A Case Report. Nucl Med Mol Imaging 2012; 46: 138–143

[4] Jain TK, Basher RK, Bhattacharya A et al. 18F-FDG PET/CT in diagnosis and response evaluation in an unusual case of antisynthetase syndrome presenting as pyrexia of unknown origin. Rev Esp Med Nucl Imagen Mol 2016; 35: 197–199. doi:10.1016/j.remn.2015.08.013

[5] Ebbo M, Chagnaud C, Figarella-Branger D et al. Antisynthethase syndrome presenting as peripheral limb fasciitis. Joint Bone Spine 2013; 80: 528–530. doi:10.1016/j.jbspin.2013.02.013

[6] Clarencon F, Larousserie F, Babinet A et al. FDG PET/CT findings in a case of myositis ossificans circumscripta of the forearm. Clin Nucl Med 2011; 36: 40–42. doi:10.1097/RLU.0b013e3181feed95

[7] Hotta M, Minamimoto R, Kaneko H et al. Fluorodeoxyglucose PET/CT of Arthritis in Rheumatic Diseases: A Pictorial Review. RadioGraphics 2020; 40: 223–240. doi:10.1148/rg.2020190047

[8] Kubota K, Yamashita H, Mimori A. Clinical Value of FDG-PET/CT for the Evaluation of Rheumatic Diseases: Rheumatoid Arthritis, Polymyalgia Rheumatica, and Relapsing Polychondritis. Seminars in Nuclear Medicine 2017; 47: 408–424. doi:10.1053/j.semnuclmed.2017.02.005

Bibliography

Nuklearmedizin 2023; 62: 73–74
published online January 4, 2023
DOI 10.1055/a-1996-0157
ISSN 0029-5566