Molecular Oncologic Imaging 2023;3(2):09-12 *ISSN: 2791-965X*

Interesting Image of the Intraarterial Injection of F-18 Fluorodeoxyglucose Via Hand Dorsum

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Abstract

47 years old female patient with diagnosis of lymphoma attended for F-18 Fluorodeoxyglucose (FDG) Positron Emission Tomography/Computed Tomography (PET/CT) in order to decide treatment response. The intravenous line of the patient was inserted from the right hand dorsum and injection of the radiopharmaceutical and saline flush was performed sufficiently without suspicion of extravasations. Observation of the PET/CT images demonstrated that the injection was intra-arterial. We would like to present the PET/CT images of the patient with diagnosis of intra-arterial injection of FDG via hand dorsum.

Keywords**:** *intra-arterial, fluorodeoxyglucose, positron emission tomography.*

Introduction

Sufficient injection of the fluorodeoxyglucose is the key point of FDG PET/CT imaging. However the injection of the radiopharmaceutical might be problematic in the patient without proper injection site. In some patients the vascular structures might be damaged by previous injections especially in the patients with history of chemotherapy treatment. The extravasation of the radiopharmaceutical contributes to insufficient image quality as well as lack of the true quantification results. In rare circumstances the radiopharmaceutical injection might be through the arteries instead of venous stream. This kind of injections results in a typical sign in the imaging which is the significant amount of radiopharmaceutical accumulation in the territory distal to the artery. The arterial injection usually takes place in the arteries which are- superficially located in antecubital fossa (1). This case report present an interesting image caused by the intraarterial injection of the FDG via hand dorsum.

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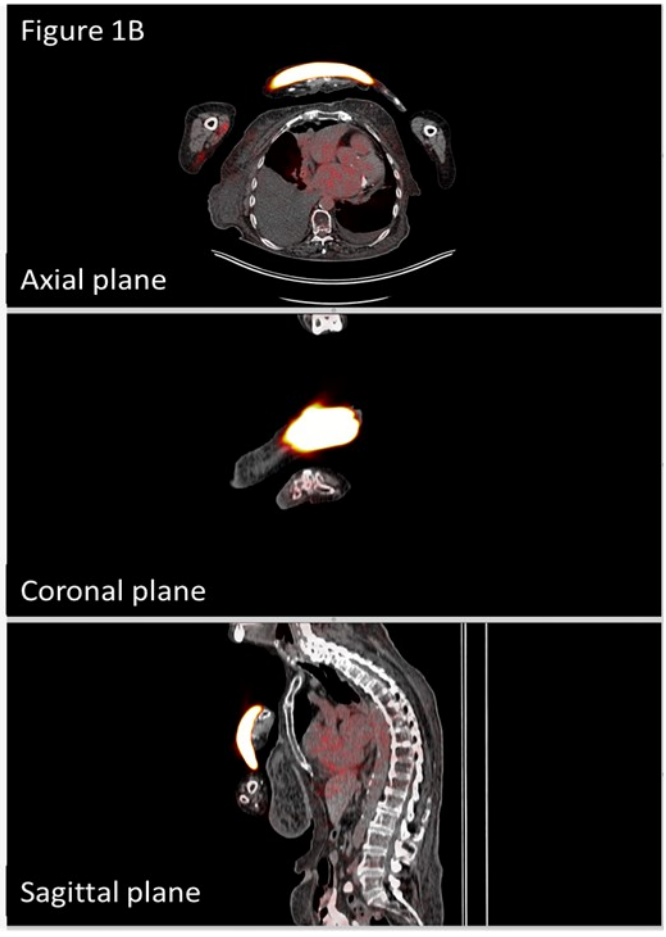
Case Report

47 years old patient with diagnosis of Lymphoma underwent Positron Emission Tomography/Computed Tomography imaging after fasting for 14 hours and limitations of physical activity for 24 hours for chemotherapy response evaluation after injection of 7,2 mCi F-18 Fluorodeoxyglucose. The injection of the radiopharmaceutical and consecutive saline flush was performed from the line placed in the right hand dorsum without extravasations. The Multiple intensity Projection image data indicated arterial injection of the radiopharmaceutical (Figure 1A).



However the image quality was sufficient for interpretation and the patients imaging results were in agreement with complete metabolic remission (Figure 1B).

Discussion

Previous researchers with observations of the arterial injection of the agents for the bone scanning suggested that the release of the tourniquet and wait for one minute (1). The hypoxemia and relative anaerobic metabolism of the extremity might cause increased accumulation after injection with tourniquet effect (2). The consequence of the intra-arterial injection which was previously determined as 'hot hand sign' was observed in our patient as well. Previous reports have indicated sufficient image quality (3, 4) relative limited effect and an interpretable image quality might be attributed to the injection of the distal arteries. Although sufficient image quality was observed the known effect of the intra-arterial injection to the standardized uptake value (SUV) has been reported previously should be considered (5, 6). This phenomenon also called 'glove phenomenon' during bone scanning agents was determined previously in FDG injection (6, 7). Previous reports usually have indicated forearm injections (8) however this is the exceptional injection of FDG via hand dorsum artery.

The cross sectional imaging characteristics might allow providing sufficient image quality in FDG PET/CT imaging. Despite the image quality in this kind of situations quantifications results cannot be reasonable. During the interpretation of the PET/CT imaging it is important to notice these kinds of observations.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: Z.P.K., **Design:** Z.P.K., **Supervision:** Z.P.K., P.P.O., O.O., **Data Collection and/or Processing:** Z.P.K., P.P.O., O.O. **Analysis and/or Interpretation:** Z.P.K., P.P.O., O.O., **Literature Review:** Z.P.K., **Writer:** Z.P.K.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

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