

TP 83 - Evaluating Residual Activity in ¹⁸F-FDG administration

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Purpose/Introduction

Positron Emission Tomography (PET) is an imaging technique, based on functional, biochemical and molecular information. It is also a useful tool in oncological examination.

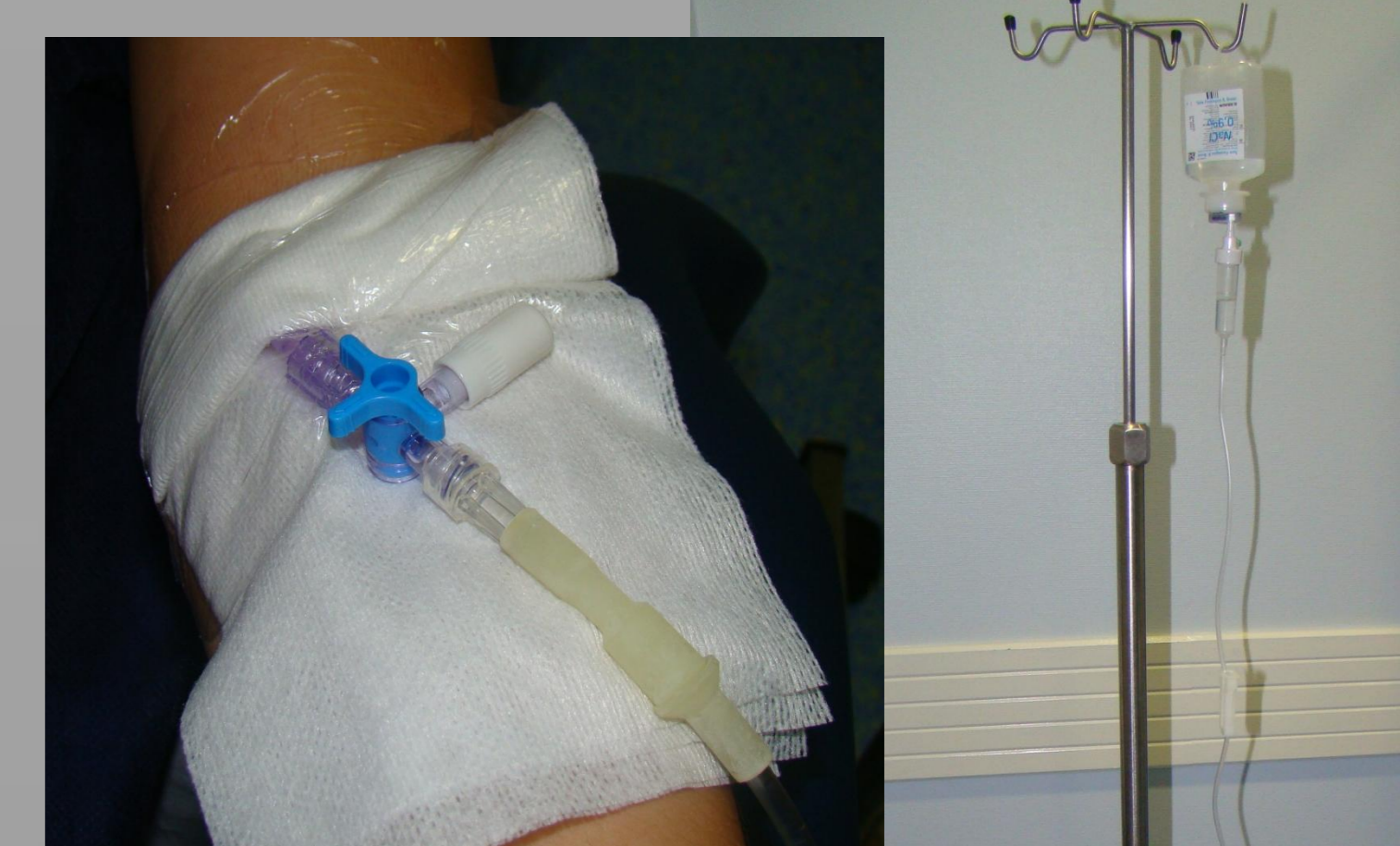
¹⁸F-FluoroDeoxyGlucose (FDG) is a widely used radiopharmaceutical in nuclear medicine departments with PET facilities. FDG's correct administration is very important in order to achieve good images and correct Standard Uptake Values (SUV).

The aim of this study was to evaluate the residual activity, according to the method used in our department.

Subjects & Methods

Residual activities of the syringes used to administer FDG to 125 patients were measured and recorded, during one month. The intravenous administration of FDG was performed only by four nuclear medicine technologists. These technologists are trained in this procedure, according with the developed technique, based on the procedure guidelines¹ for PET imaging.

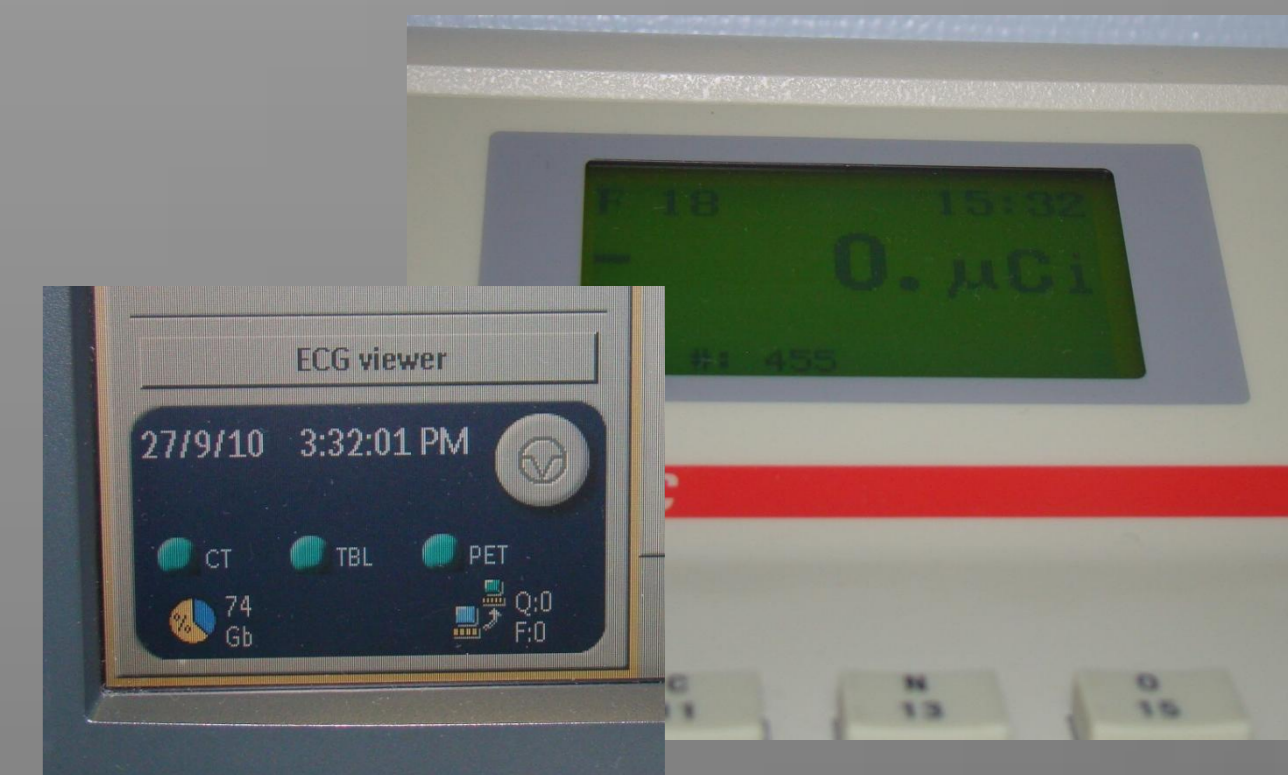
1. This technique consists in administering FDG in a catheter with a triple channel system (standard system with three-way tap to enable saline flush).



2. The syringe is always filled with saline solution to its maximum capacity (5cc) and is rinsed once, including needle rinsing.



3. Registered time in every procedure was calibrated, in order not to include bias.



Results

According to the analysis of the registered data, less than 1% of the activity calculated for the patient weight and measured for each patient remained on the syringe.

	Calculated Activity (MBq)	Measured Activity (MBq)	Measured Activity Time	Residual Activity Measure Time	Calculated Activity at residual measure time (MBq) - A	Residual Activity (MBq) - B	Residual Activity (%) - C
1	296,00	288,65	9:46	9:57	225,84	0,07	0,04
2	296,00	297,85	11:27	11:32	288,60	0,11	0,04
3	251,60	265,69	11:44	11:53	222,70	0,33	0,15
4	236,80	234,21	13:14	14:00	175,08	0,04	0,02
5	185,00	193,14	11:42	11:50	183,63	0,04	0,02
6	299,70	310,80	9:51	10:06	282,79	0,04	0,01
7	314,50	310,06	9:47	9:58	289,30	0,37	0,13
8	203,50	218,30	11:19	11:32	201,13	0,04	0,02
...							
125	151,70	168,72	12:04	12:20	152,55	0,26	0,17

Residual Activity < 1%

n = 125
mean (C) = 0,08
min (C) = 0
max (C) = 0,17

Discussion/ Conclusion

Regarding the search for the best administration procedure, we conclude that the technique used in our department results in a very low residual activity, meaning that it is an accurate technique that leads to reliable SUV values.

Bibliography

- ¹Boellaard, R.; O'Doherty, M.; Weber, W., et al: FDG PET and PET/CT: EANM procedure guidelines for tumour PET imaging: version 1.0; Eur J Nucl Med Mol Imaging, November 2009
- ²Hoffman, A.; Manson, L.; Johnson, C.; Effect of residual F18-FDG on standard uptake values; J Nucl Med; 48; 2007

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