

## Background

At present, the application of FDG-PET/CT scan is widespread for the diagnostic assessment of patients in Oncology, Neuroimaging, Infecto.inflammatory diseases and Cardiology. After almost 40 years, it has become an established nuclear imaging modality that has proved its high diagnostic accuracy .

## Objective

To describe our experience with <sup>18</sup>F-FDG PET/CT to date in the Foundation Clinic Valle del Lili (FCVL) in Cali, Colombia.

## Methods

Retrospective observational study. A total of 1360 FDG PET/CT scans were performed between June 2012 to February 2015. The PET/CT studies were performed in a hybrid computer - BIOGRAPH mCT128 SIEMENS (Siemens , Germany) including brain images, previous intravenous administration of <sup>18</sup>F-FDG with qualitative and semiquantitative evaluation. A descriptive analysis included demographic information, diagnosis, medical indication and the results of the studies.

## Results

1360 FDG PET/CT scans were performed in a total of 1184 patients (Fig 1). A total of 51 patients (3.75%) had diagnosis of two or more tumors (most frequent types were thyroid (19%) and prostate (15%) cancers). Clinical indications of FDG PET/CT scans are shown in Fig 2. Among the oncological studies, the most common diagnoses were lymphomas (28%, mostly non-Hodgkin lymphoma), other diagnoses. The medical indication to performed an oncology PET/CT scan are shown in Fig 3. The studies were positive for malignancy in 775 studies (60.6%), negative in 416 scans (32.5%) and doubtful in 88 (7%) (Figure 3 and 4).

The 85% (44 patients) of brain PET/CT scan were for refractory epilepsy. Only two patients diagnosed with this diagnosis present normal scans. The remaining brain scan had a suspicious diagnosis of dementia.

In the group of infectious-inflammatory studies, 21 (75%) were positive and 7 (25%) negative. The medical indication for this scans were fever of unknown origin (54%), vasculitis (18%), suspicious of prosthetic vascular Infection (14.2%) and others.

A total of 338 <sup>18</sup>F-FDG -PET/CT incidentalomas were identified in 331 (24%) studies. The most common location of incidentalomas was thyroid gland (21%) and brain (12%)

Characteristics	Total (n=1360)
Patients, n	1184
Age, y	
Median (IQR*)	55 (42 - 65)
Range	0.83 - 95
Female Gender, n (%)	651 (55)
< 18 años, n (%)	57 (4.8)
More than one <sup>18</sup> F-FDG PET/CT, n (%)	154 (13)
Diagnosis of two or more tumors, n (%)	51 (3.75)
Thyroid, n (%)	10 (19)
Prostate, n (%)	8 (15)

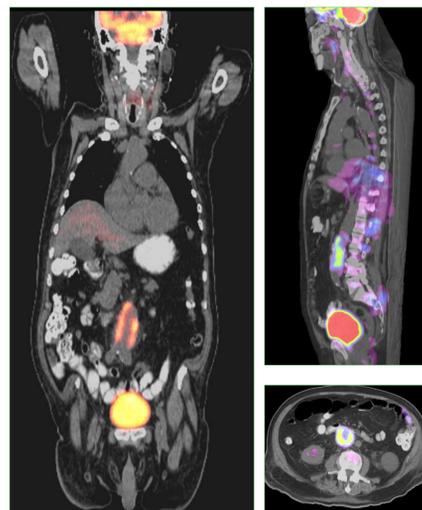
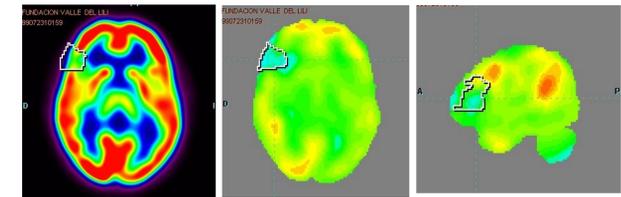
Figure 1. Demographic characteristics

Medical indications	Total (n=1279)	Positive (n=775)	Negative (n=416)	Doubtful (n=88)
Diagnosis, n (%)	133 (10.4)	85 (10.97)	40 (9.62)	8 (9.09)
Initial staging, n (%)	121 (9.46)	87 (11.23)	27 (6.49)	7 (7.95)
End-of- treatment response, n (%)	434 (33.93)	222 (28.65)	185 (44.47)	27 (30.68)
Restaging, n (%)	393 (30.73)	270 (34.84)	94 (22.6)	29 (32.95)
Elevated tumor markers, n (%)	135 (10.56)	93 (12)	32 (7.69)	10 (11.36)
Follow-up, n (%)	60 (4.69)	18 (2.32)	37 (8.89)	5 (5.68)
Monitoring response, n (%)	3 (0.23)	0	1 (0.24)	2 (2.27)

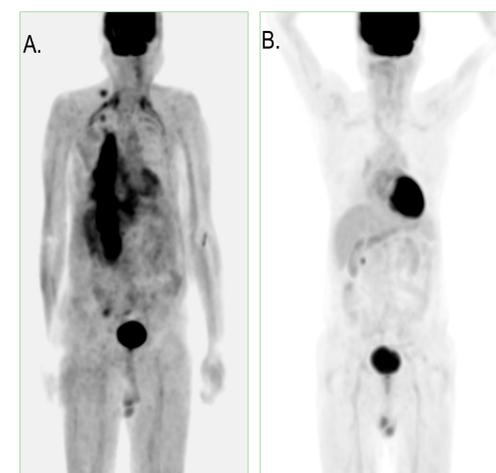
Figure 3. Medical indication to performed an oncology PET/CT

## RELEVANT CASES

**Case 1.** 10 years old boy with refractory epilepsy. Brain PET/CT evidenced mild hypometabolism in right frontal cortex suggestive of epileptogenic foci



**Case 2.** 87 years old boy with sepsis unknown origin. Previous surgery of aortic prosthetic vascular draft in 2004. PET/CT evidenced intense hypermetabolism in infrarenal aortic wall suggestive of infection



**Case 3.** 69 years old man with back pain. MRI: infiltrative lesion in dorsal low vertebraes, compatible with non-Hodgkin lymphoma on biopsy. **A.** Pre-therapy <sup>18</sup>F-FDG PET/CT evidenced hypermetabolism in paravertebral mass associated with bone infiltration in the dorsal low vertebraes and supradiaphragmatic nodes **B.** Post-therapy <sup>18</sup>F-FDG PET/CT with complete response.

## Conclusion

Our initial experience indicates that functional information obtained by a <sup>18</sup>F-FDG - PET/CT scan is unique. Although most of the studies were for oncology indications, <sup>18</sup>F-FDG PET/CT scan provides a useful information in neurological and infectious-inflammatory diseases for diagnosis an appropriate treatment. <sup>18</sup>F-FDG -PET/CT incidentalomas must be studied to rule out malignancy. This database opens the window for future trials

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