
# PET-TC con 18F FDG nella valutazione della risposta dopo radiochemioterapia (RCT) per carcinoma del rinofaringe (CRF)

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# *FDG PET/CT IN THE MANAGEMENT OF NASOPHARYNGEAL CARCINOMA*

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Aravind Mohandas, Charles Marcus, Hyunseok Kang, Minh-Tam Truong and Rathan M. Subramaniam, AJR:203,August 2014

# *FDG PET/CT IN THE MANAGEMENT OF NASOPHARYNGEAL CARCINOMA*

*Staging:*

- *T ( MRI superiore alla PET/TC)*
- *N* (18F FDG PET/CT vs MRI :Sensibilità di 97–100% vs 84–92% e Specificità = 73–97% ).
- *M* (Sensibilità 83% e specificità 97%)

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# Treatment Planning

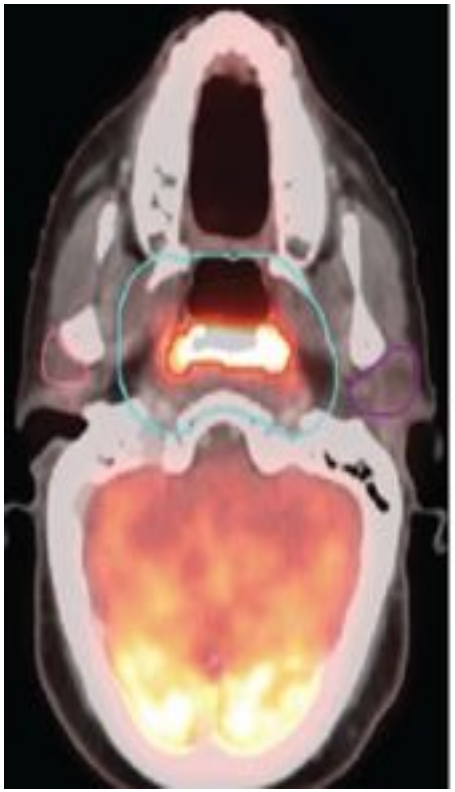

**Fig. 3**—Radiation therapy planning.
**A**, Axial fused FDG PET/CT image shows nasopharyngeal mass and target volumes. Red volume represents nasopharyngeal lesion that is FDG-avid on PET. Aqua contour represents planning target volume, which is optimized to be treated to 70 Gy. Pink and purple contours outline parotid glands as organs at risk; objective is to spare parotid glands by using mean dose of 26–30 Gy. Bilateral hemi-necks will also be treated: 70 Gy to gross disease and 56–60 Gy to elective nodal areas.

Primary Tumor Volume Measured by FDG PET and CT in Nasopharyngeal Carcinoma*Guang-Uei Hung, Iuan-Sheng Wu, Hong-Shen Lee, Weir-Chiang You,Hui-Chuan Chen, and Mu-Kuan Chen,* (*Clin Nucl Med* 2011;36: 447–451).

# Prognosi

**TABLE 1: Studies Evaluating the Impact of Maximum Standardized Uptake Value ($SUV_{max}$) on Prognosis in Patients With Nasopharyngeal Carcinoma (NPC)**

| First Author of Study [Reference No.] (Year Published) | Sample Size (No. of Patients) | $SUV_{max}$ Cutoff Used to Diagnose NPC | Endpoints | Comments |
|---|---|---|---|---|
| Hung [41] (2013) | 371 | 9.3 | 5-y OS, PFS, DMFS | OS, PFS, and DMFS were significantly worse for patients with higher $SUV_{max}$ ($p = 0.002$, $p = 0.014$, and $p = 0.045$, respectively); multivariate analysis showed significant association between $SUV_{max}$ and DMFS (HR = 3.80, $p = 0.005$) |
| Xie [40] (2010) | 62 | 8 | 5-y OS, DFS | OS and DFS were significantly worse for patients with higher $SUV_{max}$ ($p = 0.0187$ and $p = 0.0163$) |
| Chan [51] (2013) | 56 | 12 | 2-y OS | All 56 patients in the study had distant metastases at presentation; univariate analysis showed significantly worse OS for those with higher $SUV_{max}$ ($p = 0.048$) |
| Chan [42] (2013) | 165 | 18 | 5-y OS, DFS | OS and DFS were significantly worse for patients with higher $SUV_{max}$ ($p = 0.002$ and $p = 0.001$) |
| Liu [52] (2012) | 75 | 5 | 5-y DFS | DFS was significantly worse for patients with higher $SUV_{max}$ ($p < 0.001$); multivariate analysis showed significant association between $SUV_{max}$ and DFS (HR = 268, $p < 0.001$) |
| Lee [53] (2008) | 41 | 8 | 3-y DFS | DFS was significantly worse for patients with higher $SUV_{max}$ ($p = 0.007$); multivariate analysis revealed significant association between $SUV_{max}$ and DFS ($p = 0.043$) |

Note—OS = overall survival, PFS = progression-free survival, DMFS = distant metastases–free survival, HR = hazard ratio, DFS = disease-free survival.

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# Prognosi

**TABLE 2: Studies Evaluating the Impact of Total Lesion Glycolysis (TLG) and Metabolic Tumor Volume (MTV) on Prognosis in Patients With Nasopharyngeal Carcinoma (NPC)**

| First Author of Study [Reference No.] (Year Published) | Sample Size (No. of Patients) | Cutoff Used to Diagnose NPC | Endpoints | Comments |
|---|---|---|---|---|
| Chan [42] (2013) | 165 | TLG = 330 g | 5-y OS, DFS | OS and DFS were significantly worse for patients with higher TLG ($p < 0.001$ and $p < 0.001$, respectively); multivariate analysis revealed significant association between TLG and OS (HR = 3.497, $p = 0.002$) and DFS (HR = 2.191, $p = 0.041$) |
| Chan [51] (2013) | 56 | TLG = 560 g | 2-y OS, PFS | All 56 patients in the study had distant metastases at presentation; OS and PFS were significantly worse for patients with higher TLG ($p = 0.001$ and $p = 0.003$) |
| Chang [45] (2012) | 108 | TLG = 65 g | DFS, DMFS | DFS and DMFS were significantly worse for patients with higher TLG ($p < 0.001$ and $p = 0.023$); multivariate analysis revealed significant association between TLG and DFS (HR = 3.548, $p = 0.006$) |
| Xie [54] (2010) | 41 | TLG = 130 g | 5-y OS, DFS | OS and DFS were significantly worse for patients with higher TLG ($p = 0.002$ and $p = 0.005$); multivariate analysis showed significant association between TLG and DFS (HR = 3.224, $p = 0.025$) |
| Xie [54] (2010) | 41 | MTV = 30 $cm^3$ | 5-y OS, DFS | OS and DFS were significantly worse for patients with higher MTV ($p = 0.006$ and $p = 0.014$) |
| Chan [51] (2013) | 56 | MTV = 110 $cm^3$ | 2-y OS, PFS | All 56 patients in the study had distant metastases at presentation; univariate analysis showed OS and PFS were significantly worse for patients with higher MTV ($p = 0.0005$ and $p = 0.0007$); multivariate analysis showed significant association between MTV and OS (HR = 3.581, $p = 0.003$) and PFS (HR = 2.370, $p = 0.013$) |

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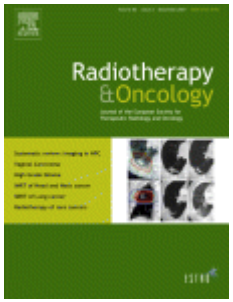



# Follow up

18F FDG PET/TC rispetto alla MRI e TC ha una Sensibilità (95% vs 78% vs 76%) e Specificità superiori (90% vs 76% vs 59%) .

FDG-PET, CT, MRI for diagnosis of local residual or recurrent nasopharyngeal carcinoma, which one is the best?A systematic review
Tao Liua,1, Wen Xuc,1, Wei-Li Yana, Ming Yeb, Yong-Rui Baib, Gang Huanga,* 2007

Valutare il ruolo della PET/TC 18F-FDG come fattore predittivo della risposta del Carcinoma del RF trattato con RCHT.

# Materiale e Metodi

**OTTOBRE 2006 - GIUGNO 2013: 24 pazienti**
**OSP. SANT'ORSOLA MALPIGHI – OSP. BELLARIA**

| **Età** | |
|---|---|
| Media | 52.1 aa |
| Range | 33-71aa |
| **Nr. Pazienti** | 24 |
| Femmine | 10 |
| Maschi | 14 |
| **Stadio** | |
| II | 6 |
| III | 13 |
| IVA/B | 5 |
| **Tipo di trattamento** | |
| RCHT | 6 |
| CHT Induzione + RCHT | 18 |

**IMRT**

CTV 66-70Gy : GTV + espansione isotropica di 5 mm
CTV 59.4 -60 Gy : include il CTV66-70 più le regioni linfonodali ad alto rischio (II, III, V alto, linfonodi retrofaringei, il livello IB sempre se N+, facoltativo se N0)
CTV50.4-54Gy : regioni linfonodali a basso rischio (IV e V livello basso).
PTV : CTV espansione isotropica di 5 mm

**CHT**

CDDP 100 mg/m2/die in infusione ev della durata di 60 minuti nei giorni 1, 21, 43.
5-FU 1000 mg/m2/die per 4 giorni in infusione continua.

PET FDG/TC pre terapia
PET FDG/TC post terapia mediamente a 5.9 mesi
ΔSUVmax T (espressa come una riduzione percentuale di SUV max al momento della diagnosi)

# Risultati

| SUV max mediano | |
|---|---|
| Pre-terapia | 16.6 ( range 3-24.4) |
| Post terapia | 6.9 (range 3-20) |

1 pz ha avuto progressione a livello T-N-M.

1 pz una progressione a distanza (metastasi ossee).

**4 pz hanno avuto una ricaduta,tempo medio alla progressione 9,7 mesi**:

1 pz T-N

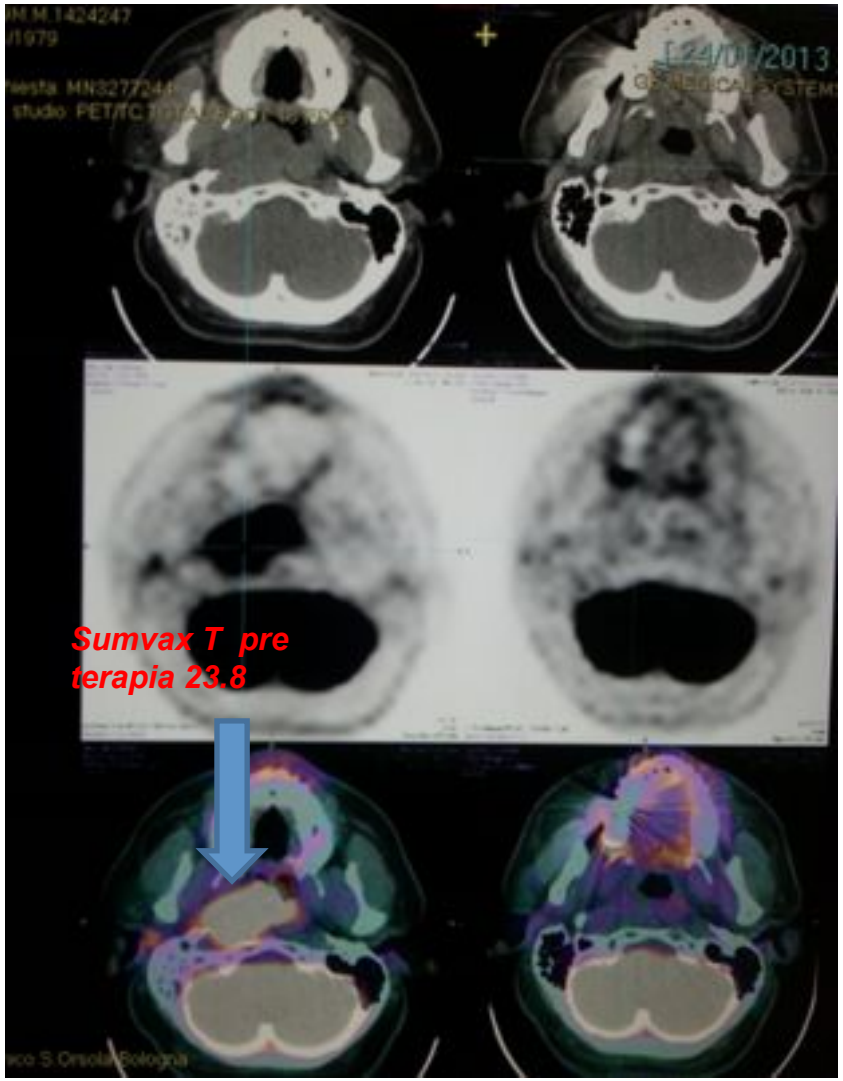
1 p sul N

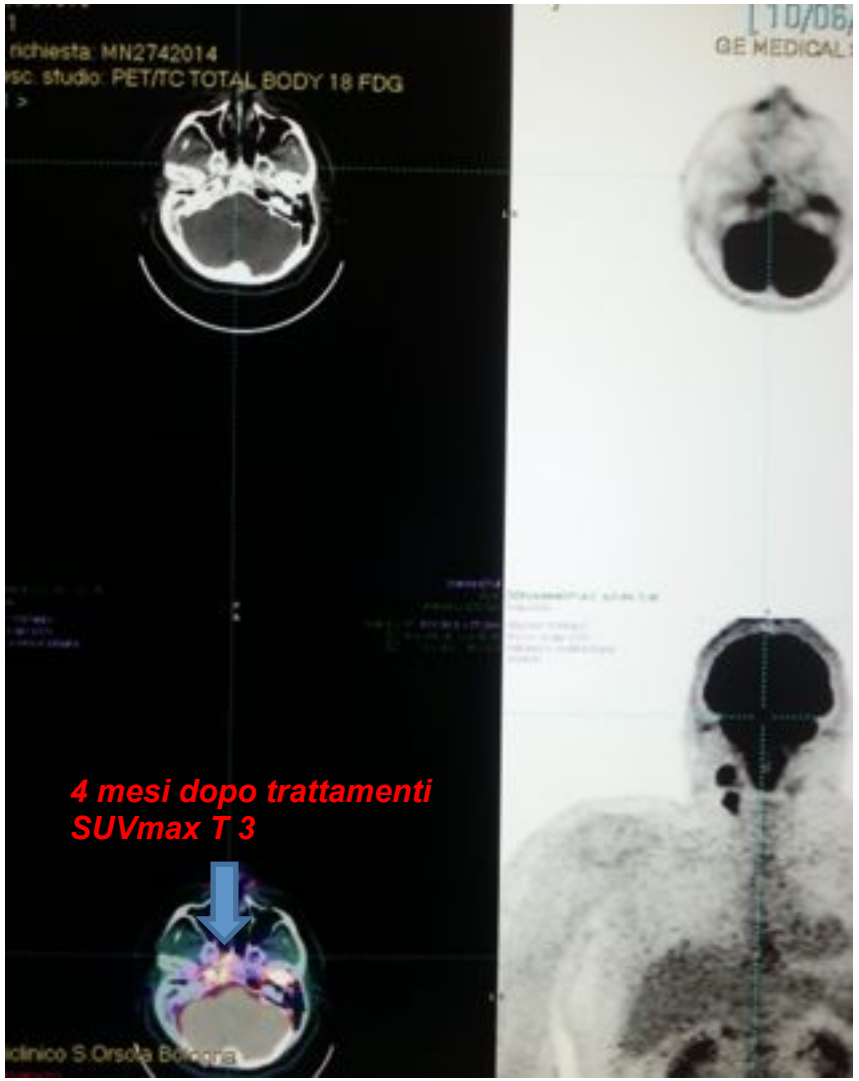
2 pz sul M

Numero totale di recidive su T: 2/24 (8,3% ).

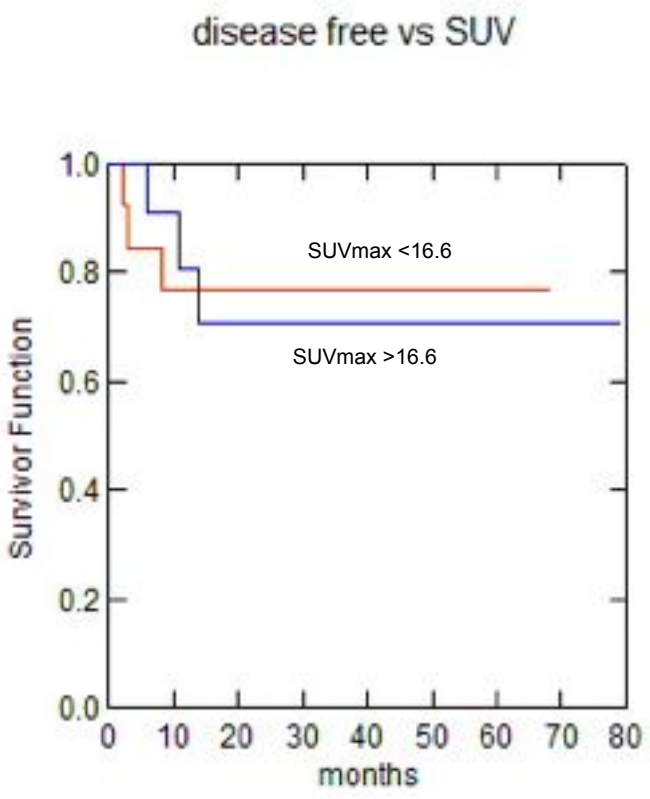
Tutti i pz in risposta completa sul T avevano alla PET/TC post terapia un ΔSUVmax T > 80% .

10 pz Δ SUVmax T > 80%
14 pz Δ SUVmax T ≤ 80%

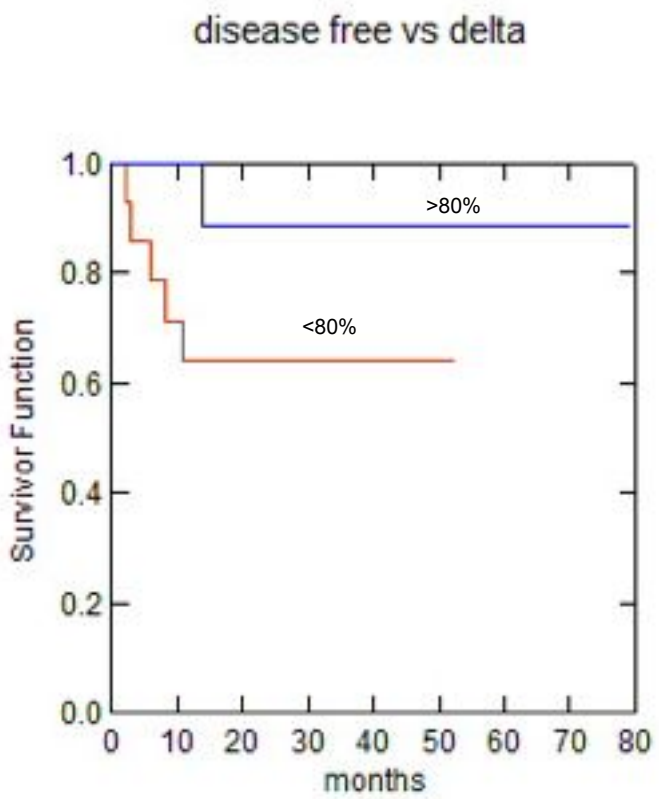

Sumvax T pre
terapia 23.8


richiesta: MN2742014
PET/TC TOTAL BODY 18 FDG
4 mesi dopo trattamenti
SUVmax T 3

# Risultati



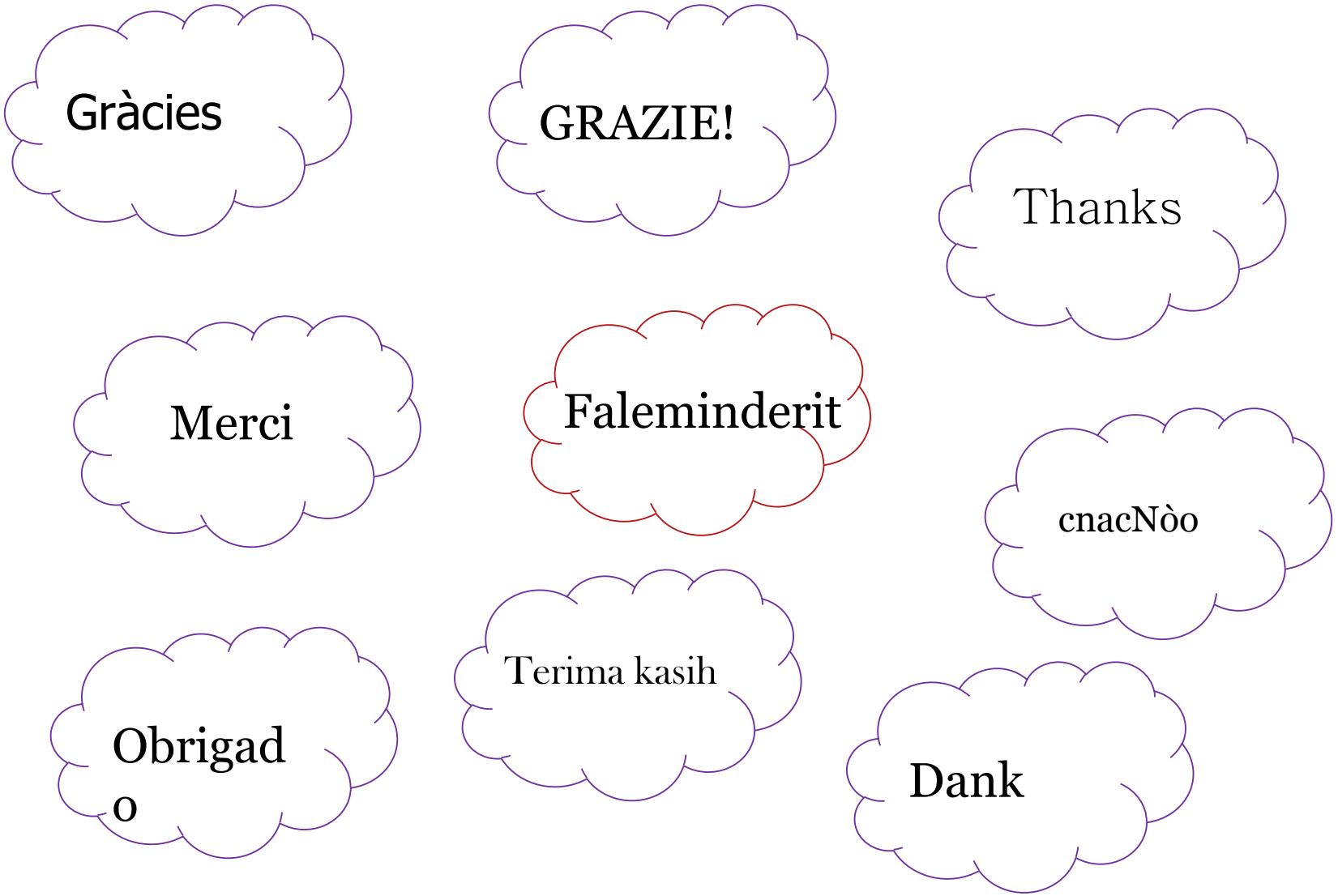

***p* NS**




***p* NS**

# Conclusioni

**Il ΔSUVmax T tra la PET-TC precedente al trattamento e quella eseguita a un intervallo medio di 5,9 m dal trattamento appare essere un importante fattore predittivo della risposta del T al trattamento con radiochemioterapia nel carcinoma della rinofaringe. Nel nostro studio retrospettivo, pur con i limiti legati alle dimensioni della casistica, abbiamo identificato un cut off >80% come fattore predittivo di un controllo della malattia sul T.**


Gràcies
GRAZIE!
Thanks
Merci
Faleminderit
cnacNòo
Terima kasih
Obrigad
o
Dank