

BACKGROUND

Fluorine18 fluorodeoxy glucose positron emission tomography/computed tomography (FDG-PET/CT) is recommended for paraaortic lymph node (PALN) assessment in locally advanced cervical cancer (LACC).

Aim of our study was to comprehensively evaluate the most valuable metabolic parameters on the cervical tumor and pelvic lymph nodes (PLN) FDG-PET/CT to predict para-aortic lymph node (PALN) metastasis and stratify patients for surgical staging.

METHODS

Patients with locally advanced cervical cancer and negative PALN uptake on preoperative FDG-PET/CT and para-aortic lymphadenectomy were included. Two senior nuclear physician experts in gynaecologic oncology reviewed all PET/CT exams, and extracted tumor SUVmax, MTV, and TLG of tumor and PLN. Prognostic parameters of PALN involvement were identified through ROC curves and logistic regression analysis.

RESULTS

125 consecutive locally advanced cervical cancer patients were included. FDG-PET/CT false negative rate was 27.7% (13/47) and 5.1% (4/78) in patients with and without FDG-PET/CT pelvic lymph node (PLN) uptake. The AUC of tumor size, SUVmax, MTV, and TLG of the cervical tumor were 0.75 [0.62-0.87], 0.59 [0.44;0.76], 0.75 [0.60-0.90], and 0.71 [0.56;0.86] respectively. The AUC of PLN size, SUVmax of PLN, SUVmean of PLN, PLN SUVmax/Tumor SUVmax ratio, MTV, and TLG of the PLN were 0.59 [0.37;0.80], 0.82 [0.69;0.95], 0.78 [0.51;0.87], 0.85 [0.72;0.98], 0.68 [0.51;0.87], and 0.74 [0.57;0.91] respectively. Metabolic parameter that showed the best trade-off between sensitivity and specificity to predict PALN involvement was ratio between PLN and tumor SUVmax.

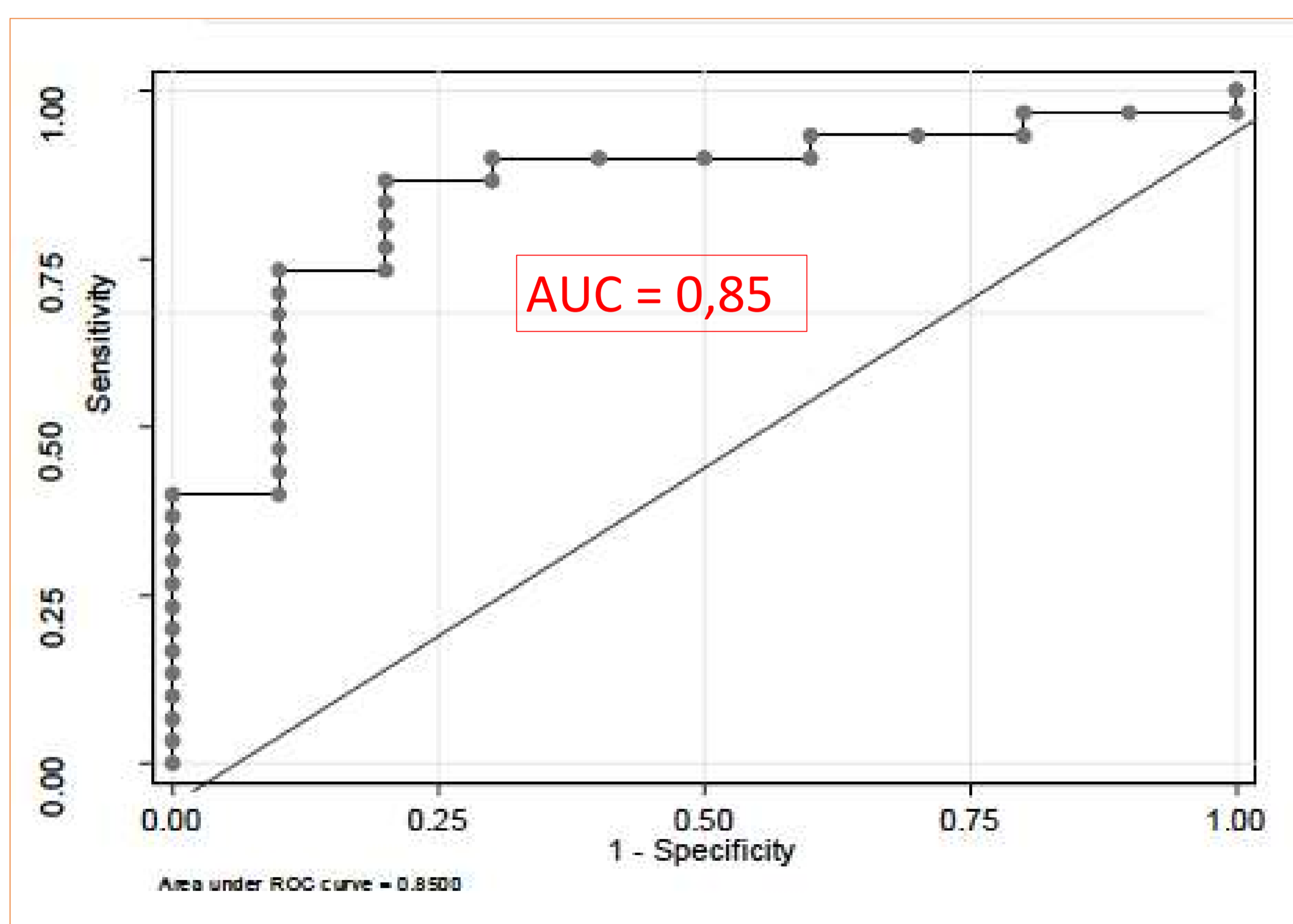


FIGURE 1

Receiver operating characteristic (ROC) curve analysis and net benefit of SUVPLN/ SUVmax ratio to predict para-aortic lymph node involvement.

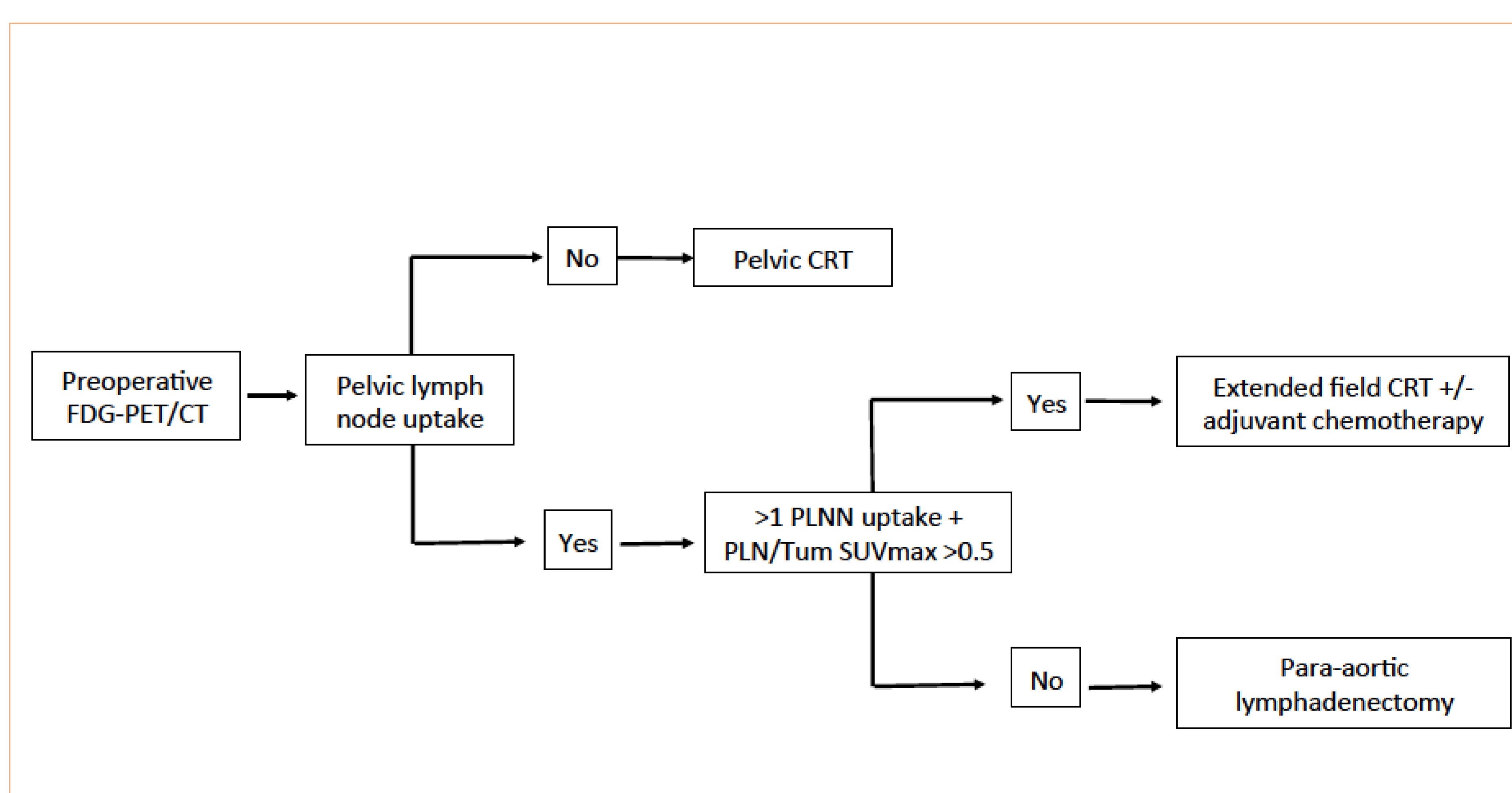


FIGURE 2

Algorithm for para-aortic assessment

CONCLUSIONS

Risk of PALN metastasis in FDG-PET/CT negative PLN patients is very low and para-aortic lymphadenectomy does not seem justified. In patients with preoperative PLN uptake on FDG-PET/CT, surgical staging led to treatment modification in more than 25% of cases and should be performed.

We propose an algorithm for PALN staging, taking in account FDG-PET/CT parameters (figure 2).