

## **Clinical applications of the standard uptake values of the contrasted $^{18}\text{F}$ FDG-PET/CT in nasopharyngeal carcinoma patients.**

### **ABSTRACT**

**Aim:** To appraise the influence of the standard uptake values (SUV) of the contrasted  $^{18}\text{F}$ fluorodeoxyglucose (FDG)-positron emission tomography (PET)/computed tomography (CT) in TNM staging and its impact on the management plan in patients with nasopharyngeal carcinoma (NPC). **Methods:** We prospectively analysed the contrasted  $^{18}\text{F}$ FDG-PET/CT findings of 14 consecutive patients (mean age  $44.64 \pm 15.03$  years) with histologically proven NPC of WHO type II or type III. The referring surgeon was asked to prospectively assign a treatment plan for all patients being evaluated by  $^{18}\text{F}$ FDG-PET/CT for the 7th edition of the American Joint Cancer Committee/Union Internationals Contre Cancer TNM staging system on CT. This treatment plan was then compared with that based on incremental information supplied by PET. The SUVmax and the widest dimension of the primary tumour, cervical lymph nodes and the distant metastatic lesions were quantified on the co-registered PET/CT images by two experienced nuclear radiologists. **Results:** The contrasted  $^{18}\text{F}$ FDG-PET/CT changed the management plan in 9 patients (64.7%). Mean primary tumour SUVmax, metastatic lymph node SUVmax and tumour size were  $14.28 \pm 9.10$ ,  $4.33 \pm 0.99$  and  $3.05 \pm 2.44$  cm<sup>2</sup>, respectively. Using bivariate analysis, there were significant correlations between the number of metastatic lymph nodes vs lymph node SUVmax and the N stage ( $r = 0.661$ ,  $P < 0.01$ ). Multiple linear regression analysis revealed the tumour SUVmax and the number of lymph nodes to be the predictors of the T stage (adjusted  $R^2 = 0.806$ ,  $P < 0.05$ ). **Conclusions:** While the tumour SUVmax and the number of lymph nodes may potentially be the surrogate markers for the T stage in the patients with NPC, the use of contrasted  $^{18}\text{F}$ FDG-PET/CT has substantially changed the management strategy.

**Keyword:**  $^{18}\text{F}$ FDG-PET/CT; Nasopharyngeal carcinoma; Images; Tumor.