Plasma EBV DNA concentration correlates with FDG PET in Nasopharyngeal Carcinoma treated with induction chemotherapy

E. Ibrahim[1]; M. Rahal[1]; H. Halawani[1]; A .Alfaraj[1]; H. Abdulkhalek[1]; H. Abdullah[2]; H. Zagloul[2]; A. Ahluwalia[2]; A. AlBuali[3]; M. Faris[1]

(1) *Medical Oncology Department, King Fahad Specialist Hospital, Dammam, Saudi Arabia*
(2) *Radiation Oncology Department, King Fahad Specialist Hospital, Dammam, Saudi Arabia*
(3) *Radiology Department, King Fahad Specialist Hospital, Dammam, Saudi Arabia*

PAJO, March 2013, 6(1): 34-37

Abstract

Background: While local control rate in locally advanced NPC (LA-NPC) has improved with concurrent Cisplatin and IMRT, development of distant metastases remains common in these patients and limits survival. The role of induction chemotherapy in the treatment of LA- NPC is still a matter of debate.
The aim of this retrospective review is to evaluate the effect of induction chemotherapy and to correlate between EBV-DNA concentration and tumor response by PET-CT.
Methods: Patients with stage III-IVB , WHO II/III received induction chemotherapy with 2 cycles of TPF : Docetaxel: 75 mg/m2, Cisplatin: 75 mg /m2, 5Fluorouracil: 750 mg / m2 CI for 96 hours followed 3-4 weeks later by concurrent weekly Cisplatin (40 mg /m2) and IMRT (GTV:70 Gy over 35 fractions). EBV-DNA quantification was performed at baseline and repeated before each cycle of TPF. PET scans were performed at baseline and repeated before IMRT. The max standard uptake values (SUV) were recorded in the primary tumors. Metabolic response was defined as a decrease in maximum SUV of 35% or more.
Results: 20 patients with LA-NPC (75%Stage IVA/IVB) were reviewed. All but one completed therapy. Objective response, according to RECIST criteria: CR: 4; PR: 14 NE: 2. Median concentration of EBV-DNA was 11,300 copies/ml (range: 1,184 - 43,000). Post TPF, reduction of EBV-DNA copies by >50% was observed in 83% pts and 66% achieved complete biochemical response. In the FDG-avid tumor pts, the median SUV at baseline was 12 (range 10.5 - 17.4). Post TPF metabolic response was observed in 100% and was complete in 33%. All patients with complete biochemical response had also a complete metabolic response by PET. At 2-year loco-regional progression free rate is 95% and 2 year overall survival rate is 84%. No recurrence was seen in complete (biochemical/metabolic) responders.
Conclusion: A negative post induction FDG-PET and complete biochemical response after TPF are of significant value in LA-NPC and are useful determinant to predict outcome.