Title: Changes in oxidative stress parameters and antioxidant status in lung cancer: Western blot analysis of nitrotyrosine and protein carbonyls content

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Body: Background: The source of many diseases, including tumours, lies in an increased generation of reactive oxygen species resulting in an oxidative stress. We investigated the relationships between advanced protein oxidation products(AOPPs), nitrotyrosine(NT), protein carbonyls(PCO) content, total antioxidant capacity(TAC) and the pro-oxidant-antioxidant balance(PAB) in patients with lung cancer. Methods: A total of 14 age-matched healthy controls, 14 subjects with non-lung cancer pulmonary disease, and 41 patients with lung cancer were included in this study. Spectrophotometry was used to examine plasma AOPP, serum TAC and PAB, while serum PCO and NT were assessed with western blot analysis. Results: A significant difference in AOPP levels were found between patients and controls(p<0.01). Also, there was a highly significant difference in NT levels between patients and controls(p<0.001). PAB showed negative correlation with albumin(r=-0.340;p=0.011) and positive correlation with CRP(r=0.342;p=0.011). AOPP, albumin, gender and smoking were the significant independent variables found by Backward Stepwise multiple logistic regression (MLR) analysis method. MLR analysis revealed that AOPP was the variable that had a significant effect on lung cancer[(p=0.006;OR=1.074;95% CI)(1.020-1.131)]. Conclusions: The use of non-invasive diagnostic biochemical parameters would represent a very important contribution to our diagnostic armamentarium in lung cancer, considering the high incidence of this deadly disease. In this regard, AOPP and NT levels have appeared to play a prominent role, although further studies are certainly warranted.