Abstract:

PURPOSE: To investigate the relationship between the hypoxia-inducible factor-(HIF-)1alpha expression in tumor tissue, tumor oxygenation and hemoglobin levels in patients with advanced cervical cancers prior to radiotherapy and the effect on clinical outcome. PATIENTS AND METHODS: The investigation included 44 patients who underwent definitive radiotherapy for advanced cervical cancers between May 1995 and March 1999. Tumor biopsies were taken prior to treatment, and HIF-1alpha expression was determined by immunohistochemistry. In the same tumor area, tumor tissue oxygenation (pO2) was measured using the Eppendorf device. RESULTS: The 5-year cancer-specific survival of all patients was 60%. Twelve of 44 tumor specimens were HIF-1alpha-negative with a significantly better 5-year survival (92 +/- 8%) versus 32 patients who were HIF-1alpha-positive (45 +/- 10%; p = 0.04). Furthermore, HIF-1alpha correlated with vascular endothelial growth factor expression (p = 0.002). In a multivariate Cox regression model, HIF-1alpha expression (relative risk [RR] = 7.5; p = 0.05) revealed an increased risk of tumor-related death. CONCLUSION: The study indicates, that endogenous tumor markers such as HIF-1alpha may serve as prognostic markers of clinical outcome concerning cervical cancer after primary radiotherapy.