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DNA Repair by ERCC1 in Non–Small-Cell Lung Cancer and Cisplatin-Based Adjuvant Chemotherapy

Reviewed by Dr. Charles Butts

Olaussen KA *et al.* NEJM 2006; 355:983-91

This is a retrospective look at a sub-group of patients in the IALT trial of adjuvant and cisplatin based chemotherapy in resected early stage non-small cell lung cancer. Tissue for analysis was available in 861 of the 1867 tumors. The ERCC1 plays a rate-limiting role in nuclear excision repair pathway that recognizes and removes cisplatin induced DNA adducts. Evidence in advanced non-small cell lung cancer suggests ERCC1 postitivity predicts for resistance to cisplatin based chemotherapy. Consistent with those results, this study suggested that the benefit of cisplatin based chemotherapy after resection of non-small cell lung cancer was associated with the absence of ERCC1. Patients with ERCC1 negative tumors had a significantly prolonged survival with chemotherapy as opposed to those in the control group (hazard ratio of .65, p.002). In contrast, those patients with the ERCC1 positive tumors had no significant improvement in outcome (hazard ratio of 1.14, p.40).

This is retrospective data that is likely to lead to a similar analysis on the tumors in the other recently reported positive trials with platinum based chemotherapy. This assessment is done by a simple immunohistochemical methodology. This combined with the data from the BR10 trial that suggests that KRAS mutations may predict for lack of benefit from platinum based chemotherapy in early stage non-small cell lung cancer suggests that we may have at our disposal predictors for the use of this type of adjuvant therapy.