

Cancer Advances: Abnormalities in the Genes Responsible for Repairing DNA May Affect the Survival of Lung Cancer Patients Treated With Chemotherapy

Posted online on June 1, 2004 on www.jco.org [1] [Read the Study](#) [2] "Platinum-based" chemotherapy treatment, including drugs like carboplatin (Paraplatin), has been the standard treatment for advanced non-small cell lung cancer (NSCLC). However, fewer than 30% of NSCLC patients respond to platinum-based chemotherapy, compared to more than 70% of patients with other types of cancer, such as ovarian cancer. To better understand why only certain lung cancer patients respond to treatment, researchers from Massachusetts General Hospital evaluated abnormalities in two genes responsible for repairing DNA, *XPD* and *XRCC1*, to see if certain abnormalities in the genes have an effect on how long patients treated with chemotherapy survive. The *XPD* and *XRCC1* genes are involved in correcting mistakes that sometimes occur when DNA is copied to prepare for cell division. Researchers suspected that the inability to repair DNA damage may lead to more aggressive lung tumors that spread more rapidly to other organs, thereby decreasing survival. Researchers looked at variations in the *XPD* and *XRCC1* genes in 103 patients with stage III and stage IV non-small cell lung cancer who had been treated with common chemotherapy drugs called cisplatin (Platinol, CDDP) and carboplatin (Paraplatin). They found that patients without variations in the two genes lived longer than patients with one or more variations. Patients with a total of three variations in the *XPD* and *XRCC1* genes survived an average of 6.8 months, while those with no variations survived an average of 20.4 months. Patients with two variations survived an average of 11 months, and those with one variation survived 16.6 months. **What Does This Mean For Patients?** Researchers noted that these findings point to the prospect of "individualized" cancer treatment, and suggest that someday physicians may be able to tailor cancer treatment based on a patient's genetic makeup. Individuals with non-small cell lung cancer should talk to their doctors about available treatment options, and the possibility of enrolling in clinical trials in their area that examine how certain genetic variations may effect a patient's response to treatment.

Links:

[1] <http://www.jco.org/>

[2] <http://www.jco.org/cgi/content/abstract/JCO.2004.08.067v1>