Cisplatin versus Carboplatin

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Dear OncoLink "Ask The Experts,"

Two respected oncology doctors have given [me] conflicting advice for stage IIIa NSCLC (non-small cell lung cancer) and chemotherapy after surgery. One advised cisplatin, saying it was somewhat more effective than carboplatin. The other said cisplatin is not used much in the U.S. any longer because it has about the same results as carboplatin, but carboplatin has much less serious side effects. I've been unable to find much comparison data on the effectiveness of these two drugs. What would you suggest?

Barbara Campling, MD, Medical Oncologist at the Abramson Cancer Center of the University of Pennsylvania, responds:

You have been given conflicting advice about the use of cisplatin vs. carboplatin as chemotherapy for stage IIIA NSCLC after surgery. I am assuming that the patient in question had a complete resection of their lung cancer. If that is the case, we are talking about "adjuvant" chemotherapy, which is given after surgery to improve the chances of cancer cure. A number of recent randomized clinical trials have shown that adjuvant chemotherapy is quite effective in improving long-term survival rates in resected NSCLC.

Most of the randomized trials comparing adjuvant chemotherapy to no further treatment after surgery have used "platinum-based" combinations of drugs. Most of these platinum-based regimens used cisplatin, and only one used carboplatin. In this one particular study, carboplatin was combined with paclitaxel, and only patients with stage IB NSCLC were included. Preliminary reports of this trial look at least as promising as trials of cisplatin-based chemotherapy combinations, with a 12% improvement in 4-year survival for the patients who received the adjuvant chemotherapy, compared to those who did not (1).

There has never been a direct comparison of cisplatin-based to carboplatin-based regimens as adjuvant treatment for lung cancer. However, there have been 8 studies which have compared cisplatin to carboplatin in advanced NSCLC (stages IIIB and IV). These are summarized in a recent meta-analysis, which is cited below (2). Some of these studies showed improved response rates and overall survival for the drug combinations that included cisplatin as compared to carboplatin, whereas others did not. When the results from all these trials were pooled, there was a small improvement in response rates in favor of cisplatin (which was statistically significant), and a minimal improvement in survival in favor of cisplatin (which was not statistically significant).

While there is ongoing debate over whether cisplatin is a more effective drug than carboplatin, there is no question that carboplatin is better tolerated. Side effects such as nausea, kidney damage, and peripheral nerve damage are all more severe with cisplatin than carboplatin.

In summary, either cisplatin or carboplatin in combination with one other chemotherapy drug is appropriate adjuvant treatment for Stage IIIA References:

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