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How long should adjuvant chemotherapy be used to prevent relapse in colon cancer? A personal case report

Preventing relapse from early stage cancer is a major unsolved problem in oncology. After diagnosis of early stage colon cancer, the tumor is removed and often adjuvant chemotherapy is used for 6 or so months near maximum tolerated levels to prevent relapse. This is used for many early stage colon cancer patients of whom there will be 143,000 in 2013 in US. This therapy is only partially effective since 52,000 patients will die of metastatic colon cancer in 2013.

In November 1994, I was diagnosed with Stage IIIC colon cancer. I had been doing cancer research for a number of years. The only drug available then was 5-fluorouracil (5-FU) but how long should I use it? If we assume first that cancer growth is orderly, i.e., all cancer cells in the tumor divide once and only once during a doubling time, and second that the chemotherapy drug used is 100% effective, i.e., it kills every cell that tries to divide, then therapy duration should be one doubling time. Colon cancer volume doubling time is 2-3 months. Based on my estimates of tumor orderliness and 5-FU effectiveness, I calculated chemotherapy should ideally be used longer than 2 years. Nobody could tolerate a toxic protocol for 2 years or more. Therefore, I used low dose infusional 5-FU therapy at a non-toxic level for 2.5 years. This simple reasoning suggests that in order to be effective for all or nearly all cases, adjuvant chemotherapy for early stage colon cancer must be essentially nontoxic and used for over 2 years.

Biography

Michael Retsky (Ph.D. in physics from University of Chicago) made a career change from physics to cancer research. He is Editor-in-Chief of Journal of Bioavailability and Bioequivalence, on staff at Harvard School of Public Health, faculty at University College London, and Prof Adj at UANL, Monterrey, Mexico. He was on Judah Folkman's staff at Harvard Medical School for 12 years. He is on the board of directors of the Colon Cancer Alliance and has published more than 60 papers in physics and cancer. He has a patent pending for treatment of early stage cancer.

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