Rapid Response:

Re: Flawed evidence underpins approval of new cancer drugs

BMJ 2019;366:I5399

23 September 2019

Richard M Fleming
Physicist-Physician
Matthew Fleming
FHHI-OI-Camelot
Los Angeles, CA

There is yet another major flaw in the determination of the effectiveness of drug treatment for cancers, which we must consider - specifically the lack of quantitative data measuring the true clinical response of the cancer to the treatment provided. The lack of prior quantifiable outcomes data has resulted in the use of qualitative imaging and the term 5-year survival.

Survival does not equal being cancer free, hence, survival does not equate to treatment success. Treatment success should be defined as nothing less than the ability to demonstrate that the treatment eradicated the cancer.

We need look no further than Jeopardy host, Alex Trebek, to see the results of supposed treatment success based upon qualitative imaging – only to be disappointed with the ominous return of the cancer.

Each cancer is the result of the cellular genetics of the particular individual interacting with the cellular environment, where a series of toxins and events have culminated in an attempt to harm or transform the cell. The interaction of this specific genome-cellular environment, elicits a series of reactions beginning within the cell. The consequence of those chemical reactions, results in the release of a variety of compounds - some of which elicit a response from the immune system, while others enhance regional blood flow to increase the delivery of nutrients to the cell and its environment.

Should the immunologic response be successful, everything returns to normal. Should the result be failure, tissue changes progress to what we have conventionally called cancer. An intermediate response, results in a change, which is neither cancer nor normal. Qualitative imaging has not allowed us to measure the true outcome – normal, transitional, cancer and hence, we cannot truly determine treatment success immediately following treatment – the time when it is most critical to know, if we are to save time, money and lives.

The greatest challenge facing treatment decisions is whether we have successfully eliminated the cancer. The current qualitative approaches do not allow us to make that clinical decision – leaving us with little credible information on treatment success. Failure to die in the face of residual cancer is not what we should consider treatment success – yet we cannot know true treatment success using qualitative testing.

True determination of treatment success requires the ability to measure the changes, which occur as a result of the cellular-environmental-treatment interaction. Like coronary artery disease (CAD), the changes resulting from the chemical processes set into place, are altered metabolism and regional blood flow differences. Quantification of these changes has recently been made possible through a utility patent (FMTVDM), which not only measures the subtle changes occurring prior to the actual development of cancer, but the subtle changes which demonstrate whether treatment is working, or should be changed.

If we are to raise the bar to ensure real benefits for patients, that bar must require the use of the ability to measure the actual benefit, or lack thereof, so clinicians can focus treatment based upon actual treatment response and not some hypothetic expectation of hope – for all the Alex Trebeks of the world.

Competing interests: FMTVDM was issued to author.