

10th International Conference on **CANCER STEM CELLS AND ONCOLOGY RESEARCH**

June 26-28, 2017 London, UK



Michael Retsky

Harvard TH Chan School of Public Health, USA

Perioperative use of NSAID might prevent early relapses in breast and other cancers: An upstream approach

A bimodal pattern of hazard of relapse among early stage breast cancer patients has been identified in multiple databases from US, Europe and Asia. We are studying these data to determine if this can lead to new ideas on how to prevent relapse in breast cancer. Using computer simulation and access to a very high quality database from Milan for patients treated with mastectomy only, we proposed that relapses within 3 years of surgery are stimulated somehow by the surgical procedure. Most relapses in breast cancer are in this early category. Retrospective data from a Brussels anesthesiology group suggests a plausible mechanism. Use of ketorolac, a common NSAID analgesic used in surgery was associated with far superior disease-free survival in the first 5 years after surgery. The expected prominent early relapse events in months 9-18 are reduced 5-fold. Transient systemic inflammation accompanying surgery (identified by IL-6 in serum) could facilitate angiogenesis of dormant micrometastases, proliferation of dormant single cells, and seeding of circulating cancer stem cells (perhaps in part released from bone marrow) resulting in early relapse and could have been effectively blocked by the perioperative anti-inflammatory agent. If this observation holds up to further scrutiny, it could mean that the simple use of this safe, inexpensive and effective anti-inflammatory agent at surgery might eliminate early relapses. We suggest this would be most effective for triple negative breast cancer and be especially valuable in low and middle income countries. Similar bimodal patterns have been identified in other cancers suggesting a general effect.

Biography

Michael Retsky has done his PhD in Physics from University of Chicago and made a career change to cancer research 30 years ago. He was on Judah Folkman's Staff at Harvard Medical School for 12 years. He is Editor of a *Nature/Springer* book on breast cancer to be published in 2017. He is a founder and 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 on treatment of early stage cancer.

michael.retsky@gmail.com

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