Chapter 14

BARRIERS TO SUCCESSFUL MANAGEMENT OF BREAST CANCER

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1. HISTORY OF THE WAR AGAINST CANCER: UNDERESTIMATING THE ENEMY

A remarkable degree of advancement has been made over the last three decades in our understanding of the nature of cancer and the successful management of at least some of its variants. Much of the progress is attributable to worldwide efforts following upon the signing to law the United States of America National Cancer Act on December 23, 1971 by President Richard M. Nixon. The Act was based on a blueprint compiled by a panel of experts, the Consultants on the Conquest of Cancer, which had been convened by the Senate of the United States. The struggle against cancer, which led to this extraordinary action of the US Senate, was spearheaded by the American people, under the leadership of Mary Woodard Lasker of the “Citizens Committee for the Conquest of Cancer”. Its tactics to get the attention of the US Government included provocative campaign-type full-page advertisements in national newspapers with slogans such as “Mr. Nixon, you can cure cancer” (1). The views of the American public and the Congress about “the war against cancer” were that with little extra effort and money, cancer would be “eliminated”. It was therefore not surprising that the signing of the National Cancer Act in 1971 was welcome with euphoria and a call “for the end of cancer by 1976” as “an appropriate commemoration of the two-hundredth anniversary of the independence of our country” (2). The euphoria of the 1970’s was to be followed twenty
years later by the gloom and pessimism of the 1990’s about the “lost war against cancer.”

2. ACHIEVEMENTS OF THE FIRST THREE DECADES OF THE “WAR AGAINST CANCER”

The panel of the Consultants on the Conquest of Cancer was charged with the responsibility of carrying out a study of the state of cancer research in the country as well as advising on the way forward. The result of the process was enhancement and acceleration of biomedical research efforts that was already on the way at the National Cancer Institute of the National Institutes of Health in Bethesda, MD, USA (3). One of the outcomes of the activities unleashed by the implementation of the National Cancer Act is the demystification of cancer, from a conundrum to our present day knowledge of it. The achievement of the first two decades following the US National Cancer Act is best appreciated by contrasting it with what had been achieved in the preceding 100 years. Peyton Rous, who was honoured in 1968 with the Nobel Prize for his work on retroviruses, dating back to 1911 when he discovered the first retrovirus, is said to have stated in his acceptance speech that the mechanism of carcinogenesis was unknown at the time (4). This statement contrasts starkly against what is now know about the process 30 years thereafter. Cancer is now characterised as a disease of genetic instability (5) involving a complexity of biochemical interplay in what is now commonly referred to as the signal transduction pathways (6). Many of the discoveries of biomedical research are leading to interventions that are already impacting on treatment outcomes. Some examples include our current understanding of the molecular basis of chronic myeloid leukaemia (7-9), and the role of HER2/neu in breast cancer pathogenesis (10), observations, which have become models for targeted therapeutic intervention in cancer control (11-13).

Other achievements of the last three decades of biomedical research include major improvements in disease taxonomy through the use of specific agents such as monoclonal antibodies. Cancers can now be more accurately diagnosed and categorised by the definition of their differentiation antigens, otherwise known as tumour markers. The new technology of DNA microarray analysis is providing valuable insights into differences in an individual’s tumour. This in turn is providing individual tissue-specific disease signatures that provide diagnosis based on hundreds of informative genes (5). Thus, it is no longer enough to characterise a case of diffuse large B-cell lymphoma as being, for instance, CD4 or CD10 positive. The use of the powerful diagnostic potentials of the DNA microarray analysis has now