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Introduction

THE THIRD millennium is almost upon us—a fitting time to reflect upon the achievements and future outlook in oncology at the turn of the century. It was, therefore, the aim of the editors of the *European Journal of Cancer* to commission a series of outstanding reviews by prominent authors on 'hot' topics to be published individually in regular issues of the journal throughout the year of 1999. Comprehensive articles on areas as wide-ranging as chemoprevention, cancer genetics and human cancer therapy have now been published and have stimulated great interest. The aim of this last special issue in 1999 was to bring together these and other diverse reviews to be published as a commemorative edition at the turn of the century.

It is interesting to note how far our understanding of many aspects of cancer has progressed over the last century. One area that has seen an explosion of information is the identification of some of the genetic abnormalities and pathways that underlie some of the most common cancers. Tumour suppressors genes such as *TP53* and *p16* or oncogenes such as *Bcl-2* and *c-myc* have become household names, whilst genetic susceptibility genes such as *BRCA1* and *BRCA2* have raised important but difficult ethical and practical questions with the resultant screening possibilities in high-risk families. Furthermore, the study of the cell at its most basic level has highlighted some of the adhesive and invasive properties the cell develops in order to metastasise. This has allowed the development of drugs aimed at preventing the metastatic potential of tumour cells.

An understanding of the varied mechanisms leading to cancer has favoured the development of many new cancer therapies, most notably perhaps the emergence of curative systemic (cytotoxic) drug treatments of some previously uniformly fatal forms of leukaemias, lymphomas and selected 'chemosensitive' solid tumours. Additional, important and frequent neoplastic diseases such as operable breast cancer have seen favourable changes in their prognosis by means of combining organ-sparing local therapy with adjuvant systemic treatment. Furthermore, much has also been achieved in the domain of supportive and palliative care of those patients progressing to or presenting with advanced, incurable disease.

The psychological effects on patients following diagnosis and treatment for cancer have gained more consideration in recent years since patients that cope better tend also to respond better to treatment. Moreover, psychological treatment no longer finishes after treatment but patients are often followed-up for many years. The importance of communication before, during and after treatment is now given proper consideration and can be of vital importance for a patient's psychological status. Nevertheless, there is still much to be done in this respect in some parts of the European community.

Finally, epidemiological studies have helped to highlight the importance of diet and environment in the prevention of many types of cancer. Environmental chemical carcinogens have been linked to several common cancers. Avoidance of such carcinogens should, in theory, reduce the number of cancer cases. However, a cautionary note should be added. Most preventive measures will not be adhered to by the general public, i.e. smokers will (in some cases) still expose themselves to carcinogens in tobacco smoke despite the general warnings. Therefore, in the absence of the habits of the general public changing, the survival of cancer patients is still mostly dependent on early detection. The good news on entering the new millennium is that the advances outlined in this issue, some of which are briefly mentioned above, have made the task of early identification of such cancers easier. Many cancers are also more successfully treated with the new cancer therapies that have emerged in the last 50 years from the experimental bench into clinical trials and finally into the community.

To conclude, the end of the 20th century has been a dynamic time of extraordinary success in cancer research and care. However, there should not be undue contemplation of the past and present whilst millions of people worldwide are still suffering from and succumbing to unconquered neoplastic diseases each year. The generation of new knowledge and its transfer from the laboratory to the bedside (so-called translational research) needs to be intensified and accelerated, particularly from the economically privileged parts to the underprivileged areas. This is true even within Europe, and poses a significant challenge for the start of the new millennium!

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