The High Tide of Cancer Research in Europe

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Years ago when we presented our inaugural professorial addresses at our universities (Queen's University Belfast and the Vrije Universiteit, Amsterdam, respectively), the subspecialty of medical oncology was very much in its infancy in Europe and postoperative clinical cancer research consisted almost exclusively of clinical trials. As medical oncologists, our passion, aside from patient care, was preclinical research, or bench-to-bedside research, now known as translational research. While at the National Cancer Institute, we both had the privilege of being trained by Dr. Bruce Chabner, a pioneer in translational research who has been the Editor-in-Chief of *The Oncologist* since its inception >16 years ago. Our common heritage led to very close collaboration between Amsterdam and Belfast that developed in a very natural way and has now grown into a very strong bond. We are very proud to have had the opportunity to contribute to translational cancer medicine in our respective countries in Europe since our return from the U.S. and to the first 16 years as editors of *The Oncologist*, helping develop the journal into an outstanding clinical and translational research journal for the clinical practitioner. One, but only one, indicator of this is documented by its ever-increasing Impact Factor (Fig. 1). In parallel with this, the European clinical cancer research landscape has

evolved at an amazing pace over the course of the last 30 years. The number of European members attending American Society of Clinical Oncology (ASCO) and American Association of Cancer Research (AACR) meetings and the European contribution to plenary sessions at both the ASCO and AACR meetings continues to grow year after year. Moreover, European cancer meetings, such as those of the European Society for Medical Oncology, have become major international conferences.

We are, therefore, delighted to announce the launch of the European edition of *The Oncologist*, allowing European colleagues to take hold of their own edition of the journal. We are grateful to our advertisers and benefactors for their support, in particular to Belén Garijo, M.D., of sanofi-aventis for her encouragement. *The Oncologist* uniquely offers the practitioner the most relevant and useful updates, a blend of clinical practice and translational research that bridges the clinical academic and industrial interface. The contents are selected by at least two section editors (European and American) for each of the various cancer subtypes. The distinguished professor of surgery John Benjamin, at the University of Chicago, once noted that "The patient is the center of the medical universe around which all our works revolve and towards which all our ef-

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Figure 1. *The Oncologist's* Impact Factor, 2003–2009.

forts tend.” This quote, adopted by our executive editor, Dr. Martin Murphy, has underpinned the editorial ethos and mission of *The Oncologist* from its inception to the present day.

Although the burden of cancer continues to grow in Europe, the prognosis for cancer patients has improved dramatically over the past decade. As a result, many more cancer patients are cured or living longer, and cancer itself is fast becoming a chronic rather than a lethal disease. The profession has developed from primarily surgical-based interventions to multidisciplinary teams in which the surgeon, oncologist, diagnostic radiologist, and pathologist all work together as part of a team and contribute to the clinical decision making and treatment. Not only does this multidisciplinary approach occur at the point of cancer diagnosis, but it also occurs throughout the entire treatment process.

Our European cancer programs have led the way in changing many aspects of clinical practice over the course of the last 30 years. One has only to look at the outcomes and methods of treatment for patients with breast cancer today and compare those with what happened 20 or 30 years ago. In the 1970s and early 1980s, three in four women diagnosed with breast cancer were, in effect, facing an inescapably poor prognosis, whereas today less than one in six women presents with late stage or locally advanced metastatic disease. Moreover, the message to the patient has completely changed with respect to both patient prognosis and quality of life. Until recently, surgeons performed a radical Halsted procedure, which entailed removal of the breast, the muscle tissue beneath it, and also the axillary lymph glands, followed by extensive radiotherapy treatment. This resulted not only in the loss of the breast but also large areas of scar tissue in the skin and painful swollen

arms caused by poor drainage of lymphatic fluid. One of the first to relate the results of his breast-sparing operations was Professor Umberto Veronesi of the Milan Cancer Centre, a true pioneer and pathfinder in cancer surgery. He had the courage to be one of the first to investigate more limited breast-sparing surgery and its benefits for women with breast cancer. At the same time, we also saw an improvement in the quality of radiotherapy that now results in relatively fewer side effects. Other Europeans, such as Professor Gianni Bonadonna from Milan, began using systemic therapy to eliminate small imperceptible metastases and was the first to apply adjuvant chemotherapy as a standard of care for patients with breast cancer. These are two great Europeans who challenged the status quo and took great risks for the benefit not only of their own patients but also for patients globally.

Europe has also led the development of some of our most important chemotherapeutic agents, such as carboplatin (London), azacitidine (Vrije Universiteit Medical Centre [VUMC], Amsterdam), doxorubicin (Milan), etoposide (Paris), cyclophosphamide (Germany), and capecitabine (Switzerland), as well as the use of combined modality therapy.

These developments are representative of the broader improvements we have seen in cancer treatment over the last 30 years. Thanks to advances in radiotherapy, systemic treatment, and surgical intervention, treatment has now become less debilitating and surgery less invasive. Postsurgical treatment with chemotherapy, and more recently with targeted therapy, has improved in leaps and bounds. Improvements include those in diseases like osteogenic sarcoma, which no longer necessitates amputation of a limb, laryngeal cancer, for which patients now maintain a normal voice, and colorectal cancer, for which the surgical approaches are much less invasive, all with much less surgical morbidity. Long periods of high-dose chemotherapy have made way for more biological targeted therapies and less onerous treatment regimes and schedules.

The approach in which every patient receives standard treatment is increasingly giving way to a stratified or personalized therapy approach focusing on the individual biological characteristics of the tumor. An example of this is the role of trastuzumab, which targets human epidermal growth factor receptor 2 (HER-2) on the cell surface of the more aggressive biological types of breast cancer. This treatment has led to significant improvements in the prognosis for women with breast cancer. Indeed, the first European clinical antiangiogenesis studies were conducted at the VUMC in Amsterdam, and these have now become one

of the biggest therapeutic arsenals of the oncologist in treating the cancer patient.

What we are now witnessing is that more and more often patients are being treated based upon the biological properties of their own individual cancer cells. Genetic breast cancer research conducted by the Netherlands Cancer Institute in Amsterdam (MammaPrint®; Agendia BV, Amsterdam, The Netherlands) and at the Erasmus University in Rotterdam have delivered important contributions to the further refinement of this therapy. Almac Diagnostics, a spinoff of the Belfast Cancer Centre, has developed the first cancer disease-specific arrays and is now working globally with a number of large biotech and pharmaceutical companies to develop companion diagnostic approaches to a wide range of new therapies, including poly(ADP-ribose) polymerase (PARP) inhibitors and vascular endothelial growth factor inhibitors using the Xcel™ (Almac, U.K.) array. The stratified medicine approach will be further developed and refined as clinical treatment approaches improve and will remain a major area of interest of *The Oncologist*. One of our founding members and colleagues, Dr. Gabriel Hortobagyi, a friend well known to European oncologists, played a prominent role in these translational studies. His achievements were recently recognized as he was chosen as the 2011 Pinedo Prize recipient, which will be conferred at the Society for Translational Oncology Annual Conference in Belfast in September of this year.

Our Universities offered us the opportunity to share our passion and vision with staff and patients alike and to convert that passion into meaningful action for patients. As a result, small cancer units grew into large academic cancer centers with the creation of multidisciplinary teams of oncologists (surgical, radiation, and medical), clinical pharmacologists, biologists, chemists, nursing staff, and allied health professionals, creating a patient-centered approach and modern clinical environments that have resulted in enhanced survival rates for cancer patients in both Northern Ireland and The Netherlands over the course of the last 15 years. The staff in our respective cancer centers have also made enormous contributions to those advancements in the treatment of cancer patients. In The Netherlands, the public/private Centre of Translational Molecular Medicine was recently established by the Dutch government whereas the VUMC was selected by the European Union as the site for the European Advanced Translational Research Infrastructure in Medicine. The strength of the Queen's University Comprehensive Cancer Centre in Belfast lies in its multidisciplinary ethos and the contribution it has made through its teams of scientists and clinicians working together among the university, National Health Service, and industry. Over the past decade, researchers in Belfast have been

involved in deciphering the different genetic codes of tumors in colorectal, breast, and lung cancer and determining how particular gene signatures can assist in diagnosing and predicting response to chemotherapy and radiotherapy. They have also led the way in the development of several new investigational compounds, including PARP inhibitors. The Queen's Centre now forms one of the Cancer Research UK's Cancer Centres and is one of the key Experimental Cancer Medicine Centres in the U.K., with an overall investment of £200 million over the course of the last 10 years. These developments in our respective centers have galvanized the clinical community alongside the national and local cancer charities who have engaged in the leadership of national European and international scientific and clinical research networks. This has resulted in overall changes in treatment patterns and, most importantly, better outcomes for cancer patients.

Despite major advances in cancer treatment, prevention, and research, there still remains much to do in Europe. There remain too few Centers of Excellence throughout Europe, and access to top quality cancer treatment remains patchy. Creation of multidisciplinary team approaches to cancer patient care is not universally available and not all our patients in Europe have access to new drugs, with <10% of our cancer patients enrolled in clinical trials. Whereas the scourge of cancer continues to grow, there remains a shortage of cancer physicians, surgeons, and cancer nurses throughout Europe. As a result, there is still a need to further enhance the European clinical cancer infrastructure, in order to cope with the rapidly increasing numbers of chronic cancer patients and cancer survivors, and the more modern multidisciplinary team-based approach to cancer treatment.

While we continue to work on refining treatment across Europe, we must also work on capacity building as well as cancer prevention. European screening programs for breast and cervical cancer are wonderful examples of how secondary prevention has already borne significant fruit. Important issues remain, such as a lack of screening programs for colorectal cancer, which a number of European countries have now begun to implement. The widespread use of prostate-specific antigen testing as a screening tool for prostate cancer has also been adopted, but this remains somewhat controversial. One must also remember the role of primary prevention and, in particular, the leadership role European countries played in banning cigarette smoking in public places. Ireland led the way in this regard and was the first country to introduce a public ban, an example that other European countries were quick to follow. Given the scourge of cigarettes and the fact that they are responsible for >50% of all types of cancer, this must rank as one of the most impor-

tant developments in the last 30 years. It is the next generation that shall bear the benefit of these important advances in cancer health care policy and legislation.

One of the very unique and most important features of *The Oncologist* has been the continued focus on the cancer patient, and this remains the journal's focus today. Although, collectively, our work has led to significant advances in patient treatment and improvements in quality of care, these challenges will continue as we find new ways of treating patients for the future. As the European editors of *The Oncologist*, we, along with our European

section editors, must ensure that novel advances are brought to the attention of practicing oncologists, policymakers, and the public, in order to ensure that patients benefit from advances in treatment as quickly as possible. We hope that the European edition of *The Oncologist* will become that "pulpit" and continue to inspire our European colleagues to continue their leadership and share their compassion first hand with patients, and as a result implement the important legacy of this journal, which is quality care for cancer patients—throughout the world.