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Interventional Oncology: the fourth pillar of oncology

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Interventional Oncology (IO), the youngest and most rapidly growing offshoot of interventional radiology, has successfully established itself as an essential and independent pillar within the firmament of multidisciplinary oncologic care, alongside Medical, Surgical, and Radiation Oncology. What began as a limited, almost abstract idea of a minimally-invasive image-guided tumor therapy became a comprehensive and creative new specialty, driven by seemingly unlimited technological innovation. The perception of IO has evolved from suspicion, ignorance or skepticism into something that is fully accepted and demanded by knowledgeable oncologists, who seek our council as equals. Our clinical partners now refer patients with the expectation that we will apply and integrate our minimally-invasive therapies into an individualized, oncologic care plan with our sister disciplines. This gratifying new level of clinical collaboration on equal terms is a result of many years of organized effort by our increasingly organized community to establish the credibility of our discipline, which is more and more based on prospectively collected clinical evidence. As a result, the path towards building an IO practice is now open for an entire generation of young practitioners of minimally-invasive, image-guided tumor therapies.

The toolbox of an IO practitioner builds upon common services for cancer patients such as venous and enteral access, biopsies, and palliative procedures. These basic services often represent the initial point of contact with our specialty for our patients and their referring oncologist. Because of the very nature of our therapeutic concepts and our ability to provide quick solutions for increasingly complex problems with symptom relief as a common result, patients view our care with satisfaction and share their impression with the referring physicians. In a way, patient satisfaction has become our most valid argument in our struggle for recognition. As such, every biopsy, chest port, or paracentesis provides an opportunity to offer more sophisticated services to manage the patient's cancer, and to educate patients and fellow oncologists about the value of IO.

Cancer has surpassed cardiovascular diseases and is now the leading cause of death worldwide. At the same time, medicine as a whole is undergoing a historic transformation in light of a stagnating economy, declining reimbursements and a growing demand for faster, increasingly individualized and more affordable health care solutions. Given the unique position of IO as a technology-driven specialty that is able to address all of the above mentioned demands, growth in the field is guaranteed for the foreseeable future. This new reality comes with the professional requirements for a highly specialized interventional oncologist who has the skill and the will to grow a practice. To maintain and further expand our position as the fourth pillar of clinical oncology requires much more than the technical skills learned in a fellowship. To earn the trust and respect of referring clinical partners,

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interventional oncologists need to speak the language of oncology, and be able to self-sufficiently care for cancer patients longitudinally. Thus, we must ensure to continuously renew and broaden our knowledge of the science and practice of interventional oncology which will enable us to communicate with our sister disciplines in a language they understand. Knowing the fundamentals of the other oncologic disciplines must therefore become a prerequisite for every interventional oncologist. Another requisite is complete familiarity with the widely accepted treatment guidelines for various cancers which form the basis for most treatment plans. Most importantly, it is our obligation to be on the forefront of clinical research and development of our own profession which must continue to uphold the rigid standards of evidence-based medicine in order to compete with other quickly evolving oncological solutions.

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Presence at Tumor Boards on equal terms with our clinical partners is critical to ensure continued patient accrual. Comprehensible and data-driven argumentation for efficacy and superiority of our treatments over e.g. systemic chemotherapies or best supportive care is essential to succeed at the gateway to a sustainable IO practice. Unfortunately, image-guided therapies do not lend themselves well to trial designs familiar and accepted by the medical oncologists who write the guidelines. Our community has acknowledged these limitations and is evolving away from single-institution, retrospective, underpowered reports that have no influence on clinical practice. With a growing number of prospective, multi-center clinical trials that offer compelling outcomes, we will eventually be able to change therapeutic paradigms.

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Tremendous progress has been made over the last decade, yet the IO community has a long road ahead. A successful example for our ability to influence clinical guidelines is primary liver cancer (hepatocellular carcinoma) where two therapies performed by interventional oncologists, ablation and chemoembolization, have meanwhile been incorporated into official treatment guidelines worldwide. Not only are they included in the guidelines, but the evidence to get these procedures to that level was the highest possible, i.e. level 1a. That is a remarkable achievement given that the field of interventional oncology is still so new. Based on the aforementioned example, our new norm for answering clinical questions must be based on prospective multicenter phase II or III studies, either single-arm or randomized.

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With that in mind, the special issue of The Cancer Journal: The Journal of Principles & Practice of Oncology is devoted to New Developments in Interventional Oncology and presents recent developments and relevance of Interventional Oncology as the fourth pillar of oncology.