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Introductory Chapter: Multidisciplinary Colorectal Cancer - First Steps to Encompass Various Strategies for Preventing and Treating Colorectal Cancer

Keun-Yeong Jeong

1. General facts on colorectal cancer

Over the past decades, significant progress has been made in clinical and preclinical sciences. It has been lucky to see the integration of multiple discovery disciplines in science and medicine to push the limits of diagnosis and treatment of disorders that can affect many diseases. However, cancer is an exceptional disease that is relatively intractable and despite the multiple discovery disciplines scholarly. Colorectal cancer (CRC) is the third most common cause of cancer-associated mortality worldwide. According to the data from the National Center for Health Statistics, about 135,000 people are estimated to undergo chemotherapy with CRC in the USA each year, and approximately 50,000 people succumb to the disease annually [1]. Additionally, estimation of the Global Cancer Control project indicated that nearly 2 million people worldwide were diagnosed every year [2]. Well-known option targeting CRC treatment is currently suggested surgical resection preferentially, and if the tumor progression is in an advanced stage, it does require combination with chemotherapy and/or radiation therapy. There is no doubt that surgery, chemotherapy, and radiation therapy are the best choices for treating CRC, even therapeutic efficiency is improving. However, it is still insufficient to reach a convincing level except for the case of early detection; therefore the craving for better potential therapies is still ongoing.

2. Importance of a multidisciplinary approach targeting CRC

To date, the multidisciplinary approach, including initiation, promotion, and progression, which is the process leading to the final diagnosis of CRC is growing interest [3, 4]. These three series of processes belong to carcinogenesis, and it is defined as the process by which environmental and genetic change from normal cells to the final diagnosis of cancer. Initiation includes genetic changes that occur spontaneously or are induced by exposure to carcinogens. Abnormal genetic changes can lead to dysregulation of signaling pathways associated with cell growth, survival, and differentiation [3, 4]. The promotion stage is taken into account in a relatively long and reversible process in which actively growing

tumor cells are accumulated. This process is still defined as benign tumor [3, 4]. Progression is a precancerous lesion, before the onset of invasive cancer. It is the last stage of tumor transformation, where genetic and phenotypic changes and cell proliferation occur. This includes a rapid increase in tumor size, and the cells may undergo additional mutations in order to be characterized by invasive and potentially metastatic [3, 4]. As a result of these processes, CRC is finally diagnosed, and after diagnosis, a difficult fight against CRC begins. Therefore, the importance of the various intracellular environmental changes that can be experienced during these three steps of carcinogenesis cannot be overlooked; further, it would encompass the various strategies that can be considered from prevention to treatment targeting CRC pathogenesis and progression. In other words, since the clear concept of effective treatment with less toxicity, which all researchers recognize as important, cannot be convinced by any theory so far, it needs to try a way to share multidisciplinary approaches with many scholars in different disciplines.

3. Multidisciplinary CRC: introduce for contents

In the clinical sense, a multidisciplinary approach for treating CRC means that can support the providing seamless coordination of treatment and has important goals in achieving improved outcomes crucially [5]. As it can be inferred from the foregoing paragraph, however, this book is not intended to emphasize an integrated approach that takes advantage of the optimal options for CRC treatment, including surgery, chemotherapy, and radiation therapy. It contains a variety of unique academic texts on the prevention, prognostic, and therapeutic application for understanding the pathogenesis and progression of CRC. For providing preventative or prolific factors, one chapter provides an overview regarding the role of diet, alcoholic beverages, vitamins, fatness, physical activity, and dietary supplements. Another chapter explains the pathogenesis of CRC, which can be identified as the recent advances in molecular biology, through the risk factors, and also contains contents providing the applicability to new drug development for targeting advanced CRC. In addition, a chapter for therapeutics introduces a method with photodynamic therapy, describing the introduction of unconventional CRC therapy and known efficacy and potential for recent developments. Another chapter includes an introduction to the relationship between immune scores and microbiomes in prognosis in CRC patients by using a scoring system that analyzes the consequences of the immune balance beyond the concept of prognostic prediction through biological markers. In the other chapter, a comparison was made in terms of currently available systemic treatment options, efficacy, and safety profiles for understanding the patients with advanced metastatic colorectal cancer that has remained a challenge for oncologists.

4. Closing remarks

Conventional methods for treating CRC are an indispensable option; however there is enough room for improvement, and related process is always ongoing. This can be overcome by accepting a multidisciplinary concept with unconventional meaning and must be considered in an integrated framework from carcinogenesis, including initiation, promotion, and progression, to final diagnosis, treatment, and prognosis, rather than the significance of the treatment after definite diagnosis. In this regard, the book provides useful information defined “Multidisciplinary Colorectal Cancer.”

Conflict of interest

No conflict of interests exists with the publication of this chapter.

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Author details

Keun-Yeong Jeong
Metimedi Pharmaceuticals, Republic of Korea

*Address all correspondence to: alvirus@naver.com

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