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Short Communication

Total Oncology is necessary for Japanese new era

Still in Japan, medical oncologists need to play a main role and work a lot of tasks by themselves in cancer chemotherapy. The situation of cancer chemotherapy has progressed day by day and considering the current environment surrounding medical oncology, we must discuss what is necessary for and establish the new concept for medical oncology.

Cancer is one of the leading causes of morbidity and mortality worldwide [1]. In 2016, malignant neoplasms were responsible for 372,801 deaths, making it the most common cause of death in Japan [2]. The number of deaths due to malignant neoplasms has been increasing, and this trend is expected to continue. Systemic chemotherapy is usually indicated for advanced or recurrent malignant solid tumor patients. It is consisted of three categories: neoadjuvant chemotherapy and adjuvant chemotherapy for cure cases, and palliative chemotherapy for advanced or unresectable care cases, so there are many cases in daily clinical practice for malignant neoplasms.

There are many medical oncology divisions in hospitals of Japan, and medical oncologists treat advanced or unresectable malignant neoplasm patients with multidisciplinary treatment, such as chemotherapy or radiotherapy. Medical oncologists are required to learn not only clinical oncology but also basic research of cancer, clinical pharmacology and palliative medicine in Japan. As for basic research, we need to understand the existence of cancer stem cells. Cancer stem cells are defined to have the abilities of tumorigenicity, serial transplantability, and self-renewal [3], and reside at the peak of tumor cellular hierarchy. They were firstly showed in leukemia [4], and in solid tumors, for example, breast cancer stem cells were initially reported in 2003, included in CD44+/CD24- population [5]. After that, cancer stem cells have also identified in several tumors [6]. Cancer stem cells are separated from primary cancer sites, metastasize somewhere or exist in bloods as circulating tumor cells, so we can see many recurrent cancer cases. Cancer stem cells may be the target for radical therapy of cancer, so we must learn the concept. Besides, the role of tumor microenvironment along with cancer stem cells should be mentioned to get a proper understanding of the therapeutic resistance. For example, in breast cancer the relationship between breast cancer cells and their microenvironment has clarified tumor-associated stromal mediated mechanisms of resistance to standard therapeutics [7]. The evidence that tumor-associated stroma plays a main role in resistance to both chemotherapy and targeted therapies, including immunotherapy has grown [8-10]. Of course, we must research not only cancer stem cells or tumor microenvironment but also other basic fields of cancer.

We need to know about the challenges in cancer treatment research including drug resistance because cancer chemotherapies have made progress busily so far and new drugs have been commercially available one by one. It goes without saying that in many cancers, further investigation via in a prospective randomized study is needed to make overall survivals of patients longer and longer. In the course of chemotherapy, common chemotherapeutic drugs target non-cancer stem cells, but the cancer stem cells can survive, cause recurrence or even metastasis. Therefore, cancer stem cells are considered to be the key population leading to drug resistance. Due to the development of molecular markers of cancer stem cells, researchers have found that a small population of cells, selected by markers, can lead to the initiation of tumors, which further confirms the vital role of cancer stem cells in tumor initiation [11,12]. So, we should continue the challenges.

The need of palliative care units (PCU) and doctors is also important. The first PCU in Japan was established in 1981, and after that, the number of institutions providing palliative care has gradually increased. As of September 2018, there were 8,197 beds and 403 PCUs in Japan. Although PCUs have been increasing in response to the understanding of the importance of palliative care [13], the number of PCUs in Japan remains low and acute care hospitals need to take over palliative care.

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More medical staff related with cancer chemotherapy need to learn palliative care. Although the palliative care team of many hospitals is functional, the main staff involved in caring for each patient are nurses and the doctor in charge. Therefore, medical oncologists and nurses are required to have appropriate palliative care skills. In Japan, the usefulness of the Japanese version of the Support Team Assessment Schedule (STAS-J) assessment in acute care hospitals by inducing changes in the awareness of care of nurses with quantifiable and statistical analyses was shown [14]. STAS-J exhibited the potential to improve the quality of palliative care in a university hospital, and further examination of the effectiveness of STAS-J assessment in various kinds of hospitals and better skills of the medical staff, especially of medical oncologists are required. Medical oncologists also need to cooperate with doctors of PCUs.

Based on recent progress in cancer chemotherapy, a variety of new anticancer drugs (ACDs) have been developed, however, this has led to an increasing chance of exposure to ACDs for medical staff such as doctors, nurses, and pharmacists. The measures against ACDs exposure among medical staff have been promoted [15,16], and adverse events resulting from occasional exposure to ACDs are classified as biological and health influences [17–21]. Occupational exposure mainly occurs in the preparation, transportation, administration and disposal processes, and various types of occupations are associated with each process. Therefore, the importance of taking measures to prevent occasional ACD exposure has been recognized. This background shows that measures against ACD exposure among medical staff have been promoted, and this has led to increased awareness in Japan. However, the actual condition of measures against ACD exposure in each hospital that performs cancer chemotherapy in Japan remains unclear because there has been one available surveillance data especially in the English literature [22]. It goes without saying that pharmacists have great roles in performing cancer chemotherapy. In cooperation with pharmacists, medical oncologists need to improve the measurement of ACD for performing safer chemotherapy. Publishing appropriate manuals and providing adequate education for medical staff in every institution could be expected to improve this situation.

Other medical staff and occupations also relate with cancer patients. For example, cancer rehabilitation by physical therapists is useful for addressing and minimizing both the acute and long-term morbidity associated with chemotherapy-induced peripheral neuropathy [23]. Medical oncologists need to realize the usefulness of cancer rehabilitation and promote it more. Devices of daily meals fitted for cancer patients by dietitians are also necessary. Social workers are also needed for cancer patient's life, and public health nurses or lawyers may involve in cancer patients.

Taken together, various professions involve in cancer patients. Medical oncologists must learn a lot of knowledge, understand other professions deeply and cooperate with them. Medical oncology is now developing into 'Total Oncology', which is synthesized concept and field for new era oncology. We must keep a record of the state-of-the-art research or case report and to promote study, research and improvement within its various specialties, then to develop total oncology. We believe that our expertise knowledge will help in the growth of total oncology and as well help many budding research scientists all around the world, so we may ultimately help to improve patient outcomes. Total oncology is necessary for Japanese new era because it might enable cancer patients to live the higher quality of life and we could perform better cancer therapy.

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