

Precision in Oncology; a Future Prospect

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Asian Pac J Cancer Prev, 19 (7), 1739-1740

It can be considered that cancer is a disease the prevalence of which has been increased with the world modernization. Many other diseases such as huge infectious pandemics and natural or unnatural disasters have already shorten the mean age of human beings and there has been little chance for neoplastic malignancies to come on sight among the population. The causes of pandemic selection by death have been diminished by health promotion and drug discoveries which affected the life span. Development and industrialization, however, had their own new afflictions such as life style alterations, insufficient physical activity, and nutritional transition to conserves and fast food instead of traditional meal. Besides, new risk factors have arisen with the nature and nurture alterations (Cao et al., 2017).

However, modernization and industrialization cannot be blamed for all the things happening on this earth. Actually, they have played beneficial roles in the history of human. Technology could improve the quality of life and lengthen life span, and it is a strong belief that cancer morbidity and mortality can be controlled by using high throughput technology. Precision in medicine is a new horizon in approaching disease prevention, diagnosis, and treatment based on the developed technologies. Personalizing the treatment decision plan has becoming a critical topic in oncology (Vijg and de Grey, 2014).

Malignancies have various profiling based on the characteristics of the cell origin and tumor type. There are different alterations in genetic, epigenetic, protein function, microenvironment and other systematic interactions during disease progression. Different signaling pathways such as wnt, shh, and Nutch, and various kinds of growth factor receptors are involved in different phases of cancer development. Using surgical excision, drug therapy, radiation or other therapeutic plans cannot always eradicate all tumor cells and bring complete remission, since tumor is a complex of heterogeneous cancer cells. In some cases, using different types of drugs which are more compatible with the morphology of the majority of cells in a tumor can cause the other cells with different genetic and epigenetic profiling to proliferate which leads to treatment failure and progression of disease to more advance stages such as systemic metastasis (Wu et al., 2017).

Personalizing therapeutic decision for advanced patients has been performed in recent years. There are different reports of improvement of quality of life or survival enhancement and even complete remission in some advanced cases as a result of managing tumor molecular information and cell signaling analysis. Such cases were used to be treated by palliative care and now can have a new hope for increasing their life expectancy. The future scope could be more promising even for other aspects of the disease. It is mindful that early stages can be treated based on guidelines and classic chemical, hormonal or other types of therapeutic plan. However, more reliable evidence is required to replace individualized treatment in all stages of disease (Harada et al., 2017).

Personalized medicine is still in the beginning of its way and needs more investigation and infrastructural research. Finding new biomarkers and targets in cell signaling which is involved in different aspects of disease will be helpful to increase the percentage of sensitivity in decision making. Understanding cancer biology and mechanism of invasion and metastasis will help investigators to decrease the chance of treatment failure (Harada et al., 2017).

Future Scope for Precision in Medicine

The immune response and immunity condition of patients is a new aspect of approaching (Karasaki et al., 2017). Another important point is the pharmacogenetic aspect of personalized treatment which could be considered in future planning of drug use in oncology. Like other drugs, the metabolism of drugs used in oncology depends on different kinds of enzymes which have a variety of activities based on genotype variations. For example, different polymorphisms could affect drug metabolism and should be evaluated in individuals before treatment decision making. Such information yet needs to be collected, and some young and highly motivated researchers are required to do further research in this regard (Nair 2010).

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