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Enhanced immunity to fight cancer

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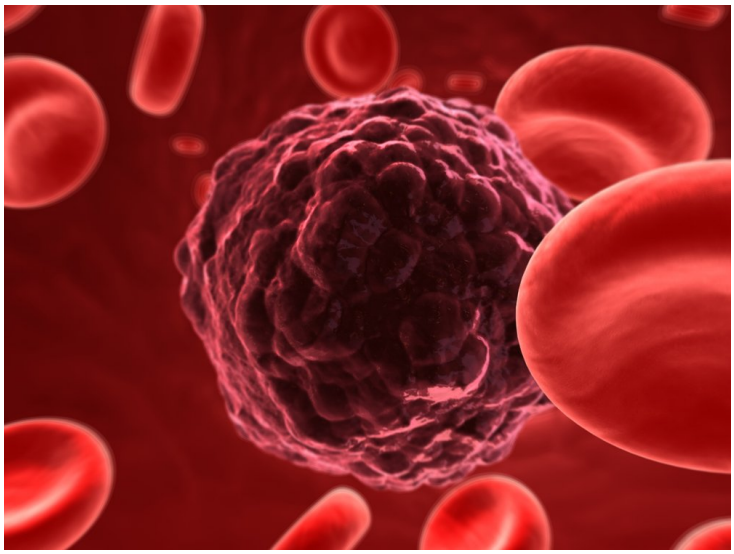

Guest Column

Dr Samuel JK Abraham is the director at Nichi-In Center for Regenerative Medicine (NCRM), India. He joined Yamanashi Medical University in Japan in 1993 and completed his post-graduate training in cardiac surgery in 1999, following which he obtained a doctorate

'What's the single sustaining formidable challenge in modern healthcare', if someone asks me, my reply would be 'cancer', an answer that I am sure many clinicians and scientists will agree with. Although cancer can be compared to weed that slowly kills the crop; the worst part is that the cancer cell (weed) itself is a transformed or a corrupt form of a normal cell (crop). It has to be identified at the earliest, destroyed without causing damage to the surrounding normal cells and preventive strategies must be implemented to ensure that it doesn't recur.

At the Nichi-In Consortium, we have taken this as a major challenge and our motto is "team work" to combine synergic allies, that is, all the weapons and methodologies available to fight against cancer. In this mission, we lay foremost emphasis on empowering our own immune system, which is usually the surveillance apparatus that prevents cancer from developing.

In the past two decades, we have proven that we are able to isolate various immune cells, such as natural killer cells (NK), cytotoxic T lymphocytes, gamma-delta T Cells from the cancer patients' own blood, multiply them in the lab and treat many types of cancers using the immune cells, importantly without any adverse reaction in this methodology. We have christened the method as Autologous Immune Enhancement Therapy (AIET).

AIET, which conceptually originated in the US, was technically perfected in Japan and has been proven for its safety and effectiveness against the cancer cell with several publications to our credit. The human immune system acts in a coherent manner incorporating numerous mechanisms and steps to curtail developing cancer cells. However, the cancer cells that originate from one's own otherwise normal cells, develop several smart ways to evade the immune system. Therefore, the treatment strategy should be multi-pronged in order to tackle them.

What we have learnt in the past two decades is that the patient's own autologous immune cells, when combined with conventional treatments such as surgical removal, chemotherapy and radiotherapy, leads to an increase in survival benefits by 30-to-35 percent.

To give a layman's perspective to this explanation of the fight against cancer, I would take the example of eradicating a group of terrorists, who have entered a house. First, we should identify the terrorists inside, with their exact location, although they could still be moving like cancer cells circulating in the blood. Clinically, we use cancer markers, ultrasound, CT scan or MRI to accomplish this. Then once identified and located, we can eradicate them by target bombing, which is like a surgery where some scar would remain and a portion of otherwise normal tissue of the relevant organ is removed. This may render the patient dysfunctional, the extent being proportional to the removed portion of the organ. At times, a chemical gas could be sent to kill the terrorists, which could be compared to chemotherapy, and this may kill the normal cells as well (residents and pets still inside the house could be in jeopardy similar to the normal cells destroyed by chemotherapy).

Now, AIET is like getting the house owners' guard dogs (immune cells), breeding them, training them and sending them back in to the house so that they can sniff the terrorists and their planted bombs (like metastases in case of cancer), destroy them to make the house a safe place without doing any harm to the inmates or the pets, who are the usual residents of the house.

The technology has been brought from Japan after a long track record of clinical application and has been reproduced with the help of local experts in India. Since 2006, NCRM has treated several cancer patients, including those of pancreatic cancer (which was inoperable), ovarian cancer (which had recurred as a stage IV disease), breast cancer with lung metastases, colon cancer with liver metastases. These treatments have been featured in several publications in peer reviewed journals and presentations.

What we have proven is that it is possible to reproduce the high-tech cell culture and tissue engineering work with good manufacturing practices (GMP) compliance in India as done in Japan and that the combining of AIET to the other conventional treatments has yielded to patients, similar safety with no adverse reactions and has improved the outcome both subjective and objective in our Indian experience. We have also learnt that the strength of the immune system is of paramount importance, which when declined, leaves a dent thereby creating an environment that may allow the development of cancer.

Our future focus

Our first mission is to study the changes in the immune mechanisms that have led to an abrupt increase in cancer incidence in India. The second one is to study the efficacy of traditional and oriental food supplements in plugging the hole in the immune system to prevent cancer.

The first mission will study the immune profile of patients, who have been affected with breast cancer in India, a disease that has been rampantly increasing since the past decade. The capability of natural killer cells, which are one of the key cancer killing cells, of those individuals who have history of breast in the family and those who don't, will be compared. This will be based on the work by Imai and others, who studied the NK cell profile of a particular population for 11 years and their results showed that lower NK cell profile was associated with an increased risk of cancer.

Our proposed study will throw light on the epigenetics of the immune system and try to find out the extent of the dent that allows this to happen; food habit or environment or any other factor. A state-of-the-art immune profile analysis lab, the first-of-its-kind in the country is to be set by Japanese technical experts in the campus of the SLIMS institute in Pondicherry, in order to accomplish this study.

Our second mission started in Yamanashi University, Japan. It involves studying how we can effectively increase the cancer killing capacity of the NK cells. There are several compounds which can increase immunity. Since we are based in both India and in Yamanashi (the wine capital of Japan), we shall use Indian traditional herbs as well as polyphenol from red wine for the study.

Eventually when a highly potent NK cell enhancing mechanism is found, we aim to have two different approaches: The first

one is for treating patients who have been diagnosed with cancer. Here, we shall take out the patients NK cells, increase their cancer cell killing capacity and inject them along with other conventional treatments.

The second one is the most important one that will prevent cancer. Our role model in this is mission is the iodized salt, that wiped off the thyroid diseases in India decades ago. Should there be a compound that will improve the NK cell function of the healthy people, its surveillance will prevent cancer and therefore a continuous intake of such low-cost and locally available food supplement could be introduced to the masses. This will enable us prevent cancer or at least postpone cancer development by a couple of decades.