Drug dependence: Cancer medicine

Less is sometimes more. This was the message delivered recently by Meghna Das Thakur of Novertis of the Institute for Biomedical Research in Emeryville California to the American Association for Cancer Research Meeting in Washington DC. If a cancer evolves resistance to the drug being used to treat it, withdrawing that drug can sometimes stop the cancer in its tracks effectively as prescribing treatment in the first place. Oncologists have suspected this for a while. Dr. Thakur has however, proved it true – at least in the specific case of malignant Melanoma and a drug called vemurafenib.

In oncological circles vemurafenib has been wonder of the age. It was one of the first reasonably reliable treatments for metastised melanoma. In those who respond it causes tumor to shrive within the weeks. The problem is that continual mutation within what little of tumor remains usually throws up resistant cell lines and so most patients see their tumors rebound between 6 months and 9 months later and once that happens a little can be carried out. However, Dr. Thakur and his fellow researchers wondered if apparently counter intuitive approach of withholding treatment might have positive effects. Roughly half of the melanomas and all of those that respond to vemurafenib are driven by a mutation in the gene for a protein called BRAF . This protein helps to regulate the cycle of growth and division that healthy cell undergo without such regulation the cell cycle continues for ever. In other words, a cancer has started.

The mutant BRAF protein activates another protein called ERK . This gives false signals to cell cycles control mechanism. Vemurafenib binding to mutant BRAF and stop this activation. However, ERK can be activated in other way and since most cancer involve a breakdown of DNA repair mechanism, which promotes mutations – sooner or later a change arises that causes this to happen. Dr. Thakur's reason that if vemurafenib were withheld at this point the extra ERK stimulating signal from new liberated mutant BRAF might cause ERK is an

effective as under active ERK for shutting cell cycle down. And also in laboratory test on mice it proved. By cycling her mice on and off the drug she was able to keep their tumors under control for significantly longer than that of animals treated continuously with vemurafenib.

Crucially, this may be true in people too. In light of Dr. Thakur's results Rosalie Fisher *et al*. at Royal Marsden Hospital London looked at 19 patients who have been taking vemurafenib but who stopped taking it when their tumors became regressive for 14 of 19 cases the growth of the tumor slowed. However, it is too early to speak, but the idea is worth investigation for other cancer drugs as millions suffer from the problem cancers.

The Noble Prize Winner German Physician Max Planck noticed that a new concept does not triumph by convincing its opponents and make them see the light, but rather because its opponents eventually dies and a new generation grows up that is familiar with it. The crucial question is, therefore, whether we at this movement in time have this new thing to examine for betterment of human welfare?.

Prof. S. G. Damle

Editor in-Chief, Contemporary Clinical Dentistry, India
E-mail: editorccd@gmail.com

Access this article online	
Quick Response Code:	Website: www.contempclindent.org
	DOI: 10.4103/0976-237X.111584

How to cite this article: Damle SG. Drug dependence: Cancer medicine. Contemp Clin Dent 2013;4:1.