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Use of new cancer drugs in India

A recent news item reported on the use of methylglyoxal in cancer patients.[1] However, the study, by a group of research scientists, had some shortcomings, as important medical details about the patients were missing. Moreover, the efficacy of a cancer drug can only be established as a result of substantial clinical and epidemiological evidence, include case series, cross-sectional studies, case reports, and finally randomised clinical trials, which will, theoretically, eliminate all biases. In the absence of randomised clinical trials, it is very difficult to ascertain the effectiveness of any anticancer medicine. Past experience has shown that many compounds, that gave promising results in animals, failed to do so in human beings, since animal and human physiology do not always react to drugs in the same way.[2]

Recently, a clinical trial of an anticancer medicine was stopped after it was found that permission to proceed with trials had not been obtained from the Drug Controller of India.[3] According to the Directorate of Drug Control (DCC), only registered medical practitioners are allowed to treat and administer medicine to patients, and there is currently a big debate going on in Kolkata about whether or not scientists should be allowed to treat cancer patients.[4]

As a result of the enthusiastic media coverage, oncologists in Kolkata are concerned by the large number of treatable cancer patients who are rejecting conventional medicine in favour of methylglyoxal therapy, administered by scientists as opposed to qualified medical practitioners. Many of these patients are now coming back to mainstream medicine for the management of conditions such as pleural effusion, jaundice, pain, bleeding, and so on. Unfortunately, oncologists are then somewhat reluctant to treat these patients. Some oncologists feel that it should be a criminal offence for a scientist who is not a registered medical practitioner to administer medicine to cancer patients.[4]

Hundreds of anticancer drugs are now undergoing clinical trials.[5] Only then will the DCC grant a patent to the company concerned in its development. The company can then market the product and doctors can prescribe it. Success in trials for evaluating new cancer drugs can only be achieved by proper teamwork, involving pathologists, oncologists, surgeons, general physicians, scientists, nurses and social workers. The most important element, the clinical trial, should be conducted in a hospital, in collaboration with oncologists.

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2 Gura T. System for identification new drugs are often faulty. *Science* 1997; **278:** 1041–42.
3 Sharma DC. Indian anticancer drug trial halted. *Lancet* 1999; **353:** 735.
4 Can scientists treat cancer patients? Kolkata: *Times of India* June 14, 2001.
5 McCarthy M. Number of cancer drugs in development rises in the USA. *Lancet Oncol* 2001; **2:** 256.

Malignant disease and von Willebrand factor

The excellent review by Nash and colleagues published in the October issue of *Lancet Oncology*, discussed the complex interactions between the coagulation system and tumour angiogenesis. The coagulation cascade was shown to be activated in most cancer patients, and vascular endothelium, platelets, and coagulation factors are now being seen as potential targets for experimental cancer therapy.[1]

Platelets were shown to both produce and transport various types of vascular endothelial growth factor (VEGF). VEGF is essential in the activation of the coagulation system, and an important component of tumour angiogenesis and the process of metastasis. One of the initial steps in tumour angiogenesis consists of accelerated endothelial cell proliferation, which results in the production of new blood vessels to support exponential tumour growth, facilitating the dissemination of tumour cells into the circulation.[2]

One glycoprotein synthesised mainly in endothelial cells and megakaryocytes is von Willebrand factor (vWF). This protein has a central role in primary haemostasis, promoting the adhesion of platelets to subendothelial surfaces and sites of vascular damage. Furthermore, vWF is a carrier for factor VIII. Increased plasma concentrations of vWF have been shown in various medical conditions associated with increased endothelial-cell proliferation and vascular damage, such as diabetes mellitus, liver diseases, connective tissue disorders, and myocardial infarction. In laboratory systems, vWF has also been shown to be involved in the process of metastasis, facilitating the binding of cancer cells to platelets. These heterotypic cellular emboli are less susceptible to recognition by the immune system, enabling the attachment of tumour cells to endothelial surfaces.[3]

Recently, it has been suggested that vWF concentrations in plasma were related to clinical staging in patients with head and neck, laryngeal, and prostate cancer.[4] In our laboratory, we have shown that plasma vWF is also increased in women with malignant breast tumours and that these concentrations were also associated with the stage of disease.[5] Plasma vWF was measured in 128 women with breast cancer, as well as in 47 women with benign breast disease and 27 healthy individuals. The amount of vWF was significantly higher in patients with breast cancer than in patients with