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Role of immunohistochemistry and biobanking in targeted cancer therapy

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Chemotherapy which has been the standard therapeutic regimen for cancer has the disadvantages of conforming to the “one size fits all” style. These standard drugs fail to distinguish malignant versus normal tissue, thus bringing along a range of adverse effects. Targeted treatment on the contrary show a greater selectivity for tumor cells and causes less damage to normal cells. It is to be noted that morphologically distinct tumours show variable biological characteristics and response to treatment. It is thus becoming important to identify these targets within the cancer tissue which include the tumour cells and the tumour microenvironment (ie, stromal cells, microvessels, and host's immune cells), all of which could serve as potential treatment targets.

Most of these biomarkers were earlier detected by molecular techniques. These tests are expensive and not easily accessible. Immunohistochemistry is an excellent surrogate to identify the proteins / targets in question. Though widely used, this technique comes with its share of challenges which could be at the preanalytical, analytical and post analytical levels. It is highly mandatory to establish robust methodologies within the laboratory to obtain the right answer, which would ultimately benefit patient management / response to treatment.

The development of new treatments or diagnostics is facilitated through biomedical research which has the potential to significantly improve patient outcomes. With the advent of personalized medicine and genomic medicine, the different arms of research such as basic research, translational research, clinical research and clinical practice have merged .

These different types of research lead to new discoveries, such as drug targets and biomarkers; development of genomic technologies; conversion of the new discoveries and inventions in collaboration with pharmaceutical and technology companies; large epidemiological studies of population health trends.

Biobanking is the key platform which provides appropriate samples from which important questions can be answered and discoveries made. Biobanking thus facilitates the development of knowledge which will result in improved patient outcomes. This facility would enable the advancement of immunohistochemistry in both diagnostic and research areas.

Biography

Beena Kumar is the Principal Investigator of the Victorian Cancer Biobank branch operating at Monash Health. She is the Deputy Director of Anatomical Pathology at Monash Health. She is the designated pathologist for Monash Breast Screen and the Lymphoma Working Group at Monash Health. She is involved in medical research and has worked as a post doctoral fellow at the Walter and Eliza Hall Institute of Medical Research and as a research fellow at the Department of Pathology, University of Melbourne. She is currently involved in oncology based research projects in the areas of breast cancer and lymphoid neoplasms. She has been a member of the Consortium Committee since July 2010.

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