

# PROTEIN RENDERING RADIATION RESISTANCE IN CERVICAL CANCER FOUND

Relevant for: Science & Technology | Topic: Biotechnology, Genetics & Health related developments

Arathi Sekhar (name changed) found herself bleeding even after menopause. She was diagnosed with cervical cancer and advised radiation and chemotherapy, together. Some of her tumours were found to increase after radiotherapy. Her treatment was stepped up and she is getting better. Not all late stage cervical cancer patients get so lucky.

Cervical cancer patients are treated with a combination of radiation and chemo therapy. The early stage disease show very good response but the in later stages of the disease some patients fail to respond to therapy.

Sweta Srivastava and her team studied the molecular pathway in the tumours and found that some cells of the tumour, which are resistant to therapy, have increased expression of a particular protein (RhoC) which leads to enhanced DNA repair in cells exposed to radiation. Similarly, ROCK2 is another molecule that gets over expressed because of irradiation and protects tumour cells against radiation. The results were published in the *Journal of Experimental and Clinical Cancer Research*.

They conducted *in vitro* studies with tumour cells and found that treatment with an inhibitor (in this case an antibody) causes decreased expression of ROCK2 resulting in decreased DNA repair thus making the cells more sensitive to radiation. The inhibitor molecule was found after much trial and error. All the work was done in the St. Johns Medical College and Hospital, Bengaluru.

The presence of RhoC and ROCK2 in the tumour cells made the scientists suggest that the two molecules can be developed as predictive biomarkers for radiation response in cervical cancer. Additionally, following future advanced studies, these molecules have the potential to be used as targeted therapy leading to changed treatment of late stages of cervical cancer.

“Although this class of molecules has been studied in other cancers, the findings of this study will help in moving a step further in personalizing treatment of cervical cancer as well as help in identifying radiotherapy-resistant phenotypes prior to initiation of treatment for the very common cancer,” says Dr. Uma Maheswari Krishnaswamy, Professor and Head, Department of Pulmonary Medicine at St. Johns National Academy of Health Sciences, Bengaluru. She is not an author of the paper.

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The 2019 Nobel Prize for Chemistry was awarded to John B. Goodenough, M. Stanley Whittingham and Akira Yoshino for working towards the development of practical lithium-ion batteries.

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