

Inspire faculty fellow's study on metabolic reprogramming and psychosocial stress correlative with breast cancer-related fatigue

Dr. Hannah P. Priyanka, an Inspire faculty fellow at the Tamil Nadu Government Multi Super Speciality Hospital, Chennai, is working on divulging the mechanism in which stress increases cancer-related fatigue in breast cancer patients. The findings can help develop intervention therapies for improving the life of breast cancer survivors.

Breast cancer, being the most common cancer, accounts for 14% of cancers in Indian women. The most common symptom, irrespective of the disease stage and treatment modalities, experienced by breast cancer patients and survivors alike is cancer-related fatigue; and it is not clinically managed/addressed in routine practice. Cancer-related fatigue is a persistent, subjective sense of tiredness that interferes with normal functioning in breast cancer patients and survivors of all age groups and seldom occurs by itself.

Dr. Priyanka, a recipient of the DST-Inspire Faculty Fellowship, instituted by the Department of Science & Technology, GoI, focuses on understanding how the disease-associated dysfunctions in the neuroendocrine-immune network disrupt the energy metabolism and lead to the manifestation of cancer-related fatigue (CRF).

In a paper published in the journal AIMS Molecular Science' recently her group has explained how the integration of energy metabolism and neuro-hormonal regulatory mechanisms may be compromised by age-associated diseases like cancer leading to manifestation of CRF. The team is now exploring the complexity of interactions among the nervous, endocrine, and immune systems by reviewing likely mechanisms by which each individual system can alter neuroendocrine-immune homeostasis.

In her preliminary assessments, Dr. Priyanka's research group has found a correlation between cancer-related fatigue and depression, perceptions about changes in the body like loss of hair or weight, hormone responsiveness.

According to her work, the quality of life of breast cancer patients was significantly reduced with an increase in depression and distress over changes in the body. There was a significant decrease in the physical, emotional, and functional well-being with increase in fatigue. They have also found that the neurotransmitter, stress and metabolic hormone levels, activities of glycolytic enzymes, and mitochondrial enzymes were correlative with cancer-related fatigue in breast cancer patients.

“The Inspire faculty fellowship will aid to unravel the modulations in the neuroendocrine-immune network leading to manifestation of fatigue, which will contribute in better understanding of the distressing symptom, and thus enable to target the problem at the clinician's level and manage it better,” said Dr. Priyanka.

Understanding how these effects are mediated will help propose clinical intervention, better therapy, and improve the quality of life of breast cancer survivors. Their work can also enable identification of biomarkers for the management of cancer-related fatigue and help develop strategic intervention plans for the prevention and treatment of CRF.



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