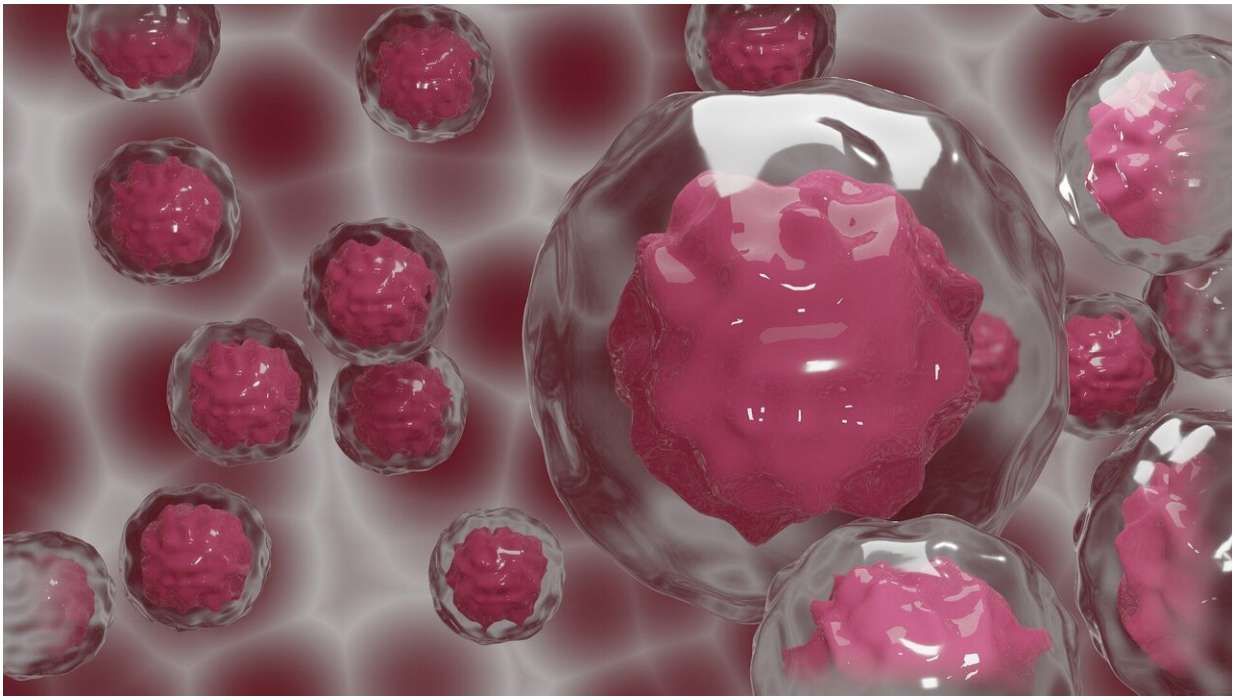
Medical Xpress

Immune system treatment to reduce stress prevents cancer metastases

July 22 2020



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Tel Aviv University researchers have found that the short time period around tumor removal surgery (the weeks before and after surgery) is critical for the prevention of metastases development, which develop when the body is under stress.

According to the researchers, patients require immunotherapeutic

treatment as well as treatment to reduce inflammation and physical and psychological stress. The research was conducted by Prof. Shamgar Ben-Eliyahu of TAU's School of Psychological Sciences and Sagol School of Neuroscience and Prof. Oded Zmora from Assaf Harofe Medical Center.

The research was published in the journal *Cancer* on June 13.

Immunotherapeutic treatment is a medical treatment that activates the immune system. One such treatment is the injection of substances with similar receptors to those of viruses and bacteria into the patient's body. The immune system recognizes them as a threat and activates itself, thus preventing a metastatic disease.

Prof. Ben-Eliyahu explains that surgery for the removal of the primary tumor is a mainstay in cancer treatment. But the risk of developing metastases after surgery is estimated at 10% among breast cancer patients, at 20%-40% among colorectal cancer patients, and at 80% among pancreatic cancer patients.

According to Prof. Ben-Eliyahu, when the body is under physiological or psychological stress such as a surgery, groups of hormones called prostaglandin and catecholamine are produced in large quantities. These hormones suppress the immune system cells' activity and indirectly increase the development of metastases. Additionally, these hormones help tumor cells left after the surgery to develop into life-threatening metastases. Exposure to those hormones causes tumor tissues to become more aggressive and metastatic.

"Medical and immunotherapeutic intervention to reduce psychological and physiological stress and activate the immune system in the critical period before and after the surgery can prevent development of metastases, which will be discovered months or years later," Prof. Ben-

Eliyahu says.

Prof. Ben-Eliyahu adds that anti-metastatic treatment today skips the critical period around the surgery, leaving the medical staff to face the consequences of treating progressive and resistant metastatic processes, which are much harder to stop. Prof. Ben-Eliyahu's research contradicts the assumption, widespread in the medical community, that immunotherapeutic treatment for cancer patients in the month before and after the surgery is not recommended.

More information: Rita Haldar et al, Perioperative COX2 and β-adrenergic blockade improves biomarkers of tumor metastasis, immunity, and inflammation in colorectal cancer: A randomized controlled trial, *Cancer* (2020). DOI: 10.1002/cncr.32950

Provided by Tel Aviv University