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Researchers find sarcoma tumor immune response with combination therapy

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A team of 18 researchers at Moffitt Cancer Center in Tampa, Fla., have found that treating high-risk, soft tissue sarcoma patients with a combination of implanted dendritic cells (immune system cells) and fractionated external beam radiation (EBRT) provided more than 50 percent of their trial patients with tumor-specific immune responses lasting from 11 to 42 weeks.

Their study was published in a recent issue of the *International Journal of* Radiation Oncology * *Biology* * *Physics* (Vol. 82, No. 2), the journal of the American Society for Radiation Oncology (ASTRO).

"Sarcomas are relatively rare forms of cancer with about 10,000 new cases in the U.S. annually," said study co-author Dmitry Gabrilovich, M.D., Ph.D., senior member of the Moffitt Department of Immunology.

The authors note that because 50 percent of patients with large, high-grade soft tissue sarcomas develop distant metastasis, new, effective treatments are needed.

"Unfortunately, conventional therapy for large, high-grade tumors is frequently systematically ineffective, making this a very deadly problem," Gabrilovich said.

According to the researchers, administration of dendritic cells has been found to be a promising method for producing an immune response because dendritic cells process antigen material and present it to other

immune cells. Dendritic cells act as immune system messengers.

"Many studies have shown that preoperative radiotherapy and surgery is effective in treating many soft tissue sarcomas with high-risk features," said Gabrilovich. "We designed our study to investigate the effect of combining the administration of dendritic cells and EBRT for patients with soft tissue, high-risk sarcomas."

The researchers hypothesized that if dendritic cell implants were combined with EBRT (the most common kind of radiotherapy treatment that not only can kill tumor cells but release tumor antigens) the combination therapy might be complimentary when the dendritic cells helped process tumor antigens released by the EBRT treatment.

"The combination treatment resulted in dramatic increases in immune T cells in the tumors," explained Gabrilovich. "The presence of T cells in the tumors positively correlated with the development of tumor-specific immune responses."

An important finding in this study was that no patient had significant tumor specific immune responses before the combined therapy. After the combination treatment, tumor specific responses were observed in 52.9 percent of trial patients.

The researchers reported that the combination treatment was "well tolerated" and that 12 of the 17 patients in the clinical trial were "progression free" after one year.

The authors concluded that given that the combination therapy proved effective in creating a potent anti-tumor response and was safe, producing no adverse side effects, larger trials with greater numbers of patients were warranted.

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