Promising ovarian cancer treatment proves effective and efficient

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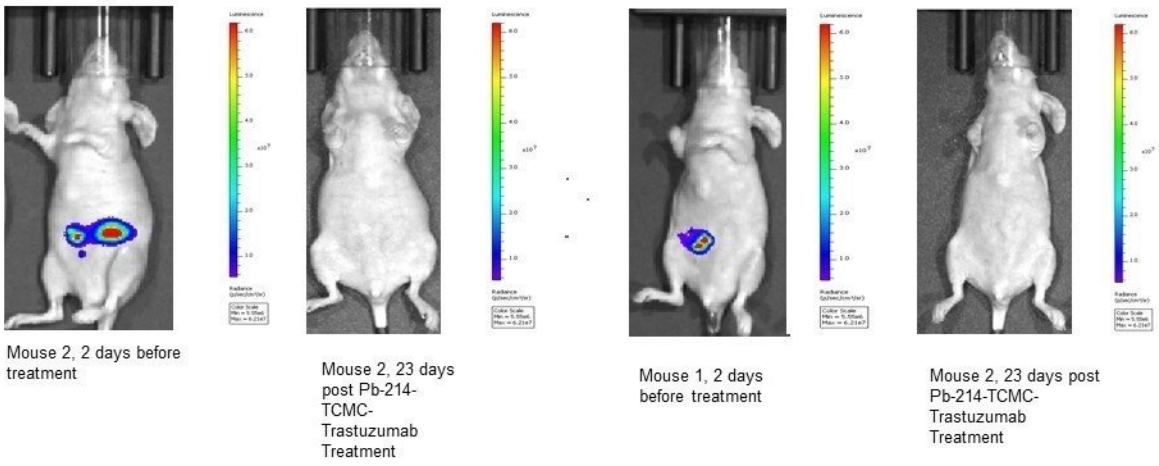

Bioluminescence images overlayed with pictures of representative mice implanted intraperitoneally with luciferase-positive ovarian cancer cells (SKOV3) before and after treatment with Pb-214-TCMC-trastuzumab. Credit: Abdullah Metebi, PhD Student at the Institute for Quantitative Health Science and Engineering, Michigan State University.

Preclinical trials of a new radiopharmaceutical to treat ovarian cancer have produced successful results, dramatically limiting tumor growth and

decreasing tumor mass. Designed specifically for ovarian cancers that are resistant to traditional therapies, the new radiopharmaceutical can be produced in 25 minutes at low cost, which leads to better efficiency compared with alternative methods. This research was presented at the Society of Nuclear Medicine and Molecular Imaging 2021 Annual Meeting.

According to the American Cancer Society, more than 20,000 women are diagnosed with ovarian cancer each year and nearly 14,000 will die from the disease. Ovarian cancer patients have a five-year survival rate of 49.1 percent. It is the fifth leading cause of cancer-related death among women.

In the study, researchers utilized a new generator system to develop the targeted alpha-therapy Pb-214-TCMC-trastuzumab to treat HER2-postive ovarian cancer. Ovarian cancer cells and mice bearing ovarian cancer tumors were split into three groups: those treated with Pb-214-TCMC-trastuzumab, those treated with Pb-214-TCMC-IgG and an untreated control group. All groups were imaged over time to determine the effectiveness of the treatment.

Compared to the Pb-214-TCMC-IgG and control groups, the tumor signal for mice and cells treated with Pb-214-TCMC-trastuzumab decreased dramatically over the course of the study, signaling the efficacy of the therapy. There were no adverse side effects from the treatment as determined by weight loss of all animals surviving.

"The short 27-minute half-life of Pb-214 is ideal for fractioned alpha particle therapeutic applications," stated Mike Zamiara, study author and president of Niowave Inc. in East Lansing, Michigan. "The generator system can provide Pb-214 every hour, potentially providing a new source of alpha particle therapy to patients at lower cost. In the future, the generator system will be available for many therapeutic products in a

turn-key system under development, providing reliable doses for improved patient care."

Abstract 93. "Therapeutic Efficacy of Pb-214-labeled Trastuzumab in a Preclinical Model of Ovarian Cancer," Abdullah Metebi, Comparative Medicine and Integrative Biology, Michigan State University, East Lansing, Michigan; Chelsea Nayback, Institute for Quantitative Health Science and Engineering, Michigan State University, East Lansing, Michigan; Jinda Fan, Departments of Radiology and Chemistry, Institute for Quantitative Health Science and Engineering, Michigan State University, East Lansing, Michigan; Nathan Johnson, John Diemer, Terry Grimm, Mike Zamiara, Niowave, Inc., Lansing, Michigan; and Kurt Zinn, Radiology and Institute for Quantitative Health Science and Engineering, Michigan State University, East Lansing, Michigan.

Provided by Society of Nuclear Medicine and Molecular Imaging