

RECENT RESEARCH:

Triple pre-surgery therapy may boost immunity against soft tissue sarcoma by Denise Heady, University of California, Los Angeles edited by Sadie Harley, reviewed by Andrew Zinin Editors'

Early results from preclinical studies and a clinical trial led by researchers at the UCLA Health Jonsson Comprehensive Cancer Center and Stanford Medicine suggest that combining targeted radiation therapy with an experimental immune-boosting drug called BO-112 and anti-PD-1 therapy before surgery may help the immune system fight aggressive soft tissue sarcomas. The findings, published in *Cancer Discovery*, show that the approach can reshape the tumor microenvironment to activate the body's immune cells against cancer. Soft tissue sarcomas are a rare and often hard-to-treat group of cancers that typically require a combination of surgery, radiation therapy and other systemic treatments. However, these tumors may still be resistant to standard therapies, highlighting the need for new treatment strategies. This study highlights a new approach that targets both the tumor and the immune system at the same time. By combining radiation therapy with BO-112, an experimental therapy, the approach aims to trigger an immune response by engaging immune cells called myeloid cells. This activation can be further enhanced by anti-PD-1 therapy. Understanding how radiation therapy, BO-112, and anti-PD-1 work together to prime the immune system offers a blueprint for developing more effective therapies for patients whose tumors are otherwise resistant to treatment.

AI PATIENT SUMMARY OF THIS RESEARCH AND THE TAKE-AWAYS:

A new research study is exploring whether a **three-part treatment given before surgery** could help the immune system better recognize and attack **soft tissue sarcomas**, including aggressive tumors that are often difficult to treat. The study was led by researchers at the UCLA Health Jonsson Comprehensive Cancer Center and Stanford Medicine and was published in the journal *Cancer Discovery*.

What was studied?

Researchers combined three therapies before surgery:

1. **Radiation therapy**
 - o Uses focused radiation to damage and kill tumor cells.
2. **BO-112 (experimental immune therapy)**
 - o A new treatment designed to “wake up” the immune system inside the tumor.
3. **Anti-PD-1 immunotherapy**
 - o A type of immunotherapy that helps immune cells recognize and attack cancer cells more effectively.

Why is this important?

Soft tissue sarcomas can sometimes resist standard treatments such as surgery, chemotherapy, and radiation. Researchers are searching for ways to make these tumors more vulnerable to the body's own immune defenses.

This new approach is important because it attempts to:

- Attack the tumor directly
- Stimulate the immune system at the same time
- Turn a “quiet” tumor into one the immune system can recognize and fight

What did the researchers find?

Early laboratory studies and an early clinical trial suggest that the triple therapy may:

- Increase immune activity inside the tumor
- Help immune cells enter and attack the cancer
- Change the tumor environment so it becomes less protective of the cancer
- Potentially improve how patients respond to treatment before surgery

Researchers found that radiation plus BO-112 may activate special immune cells called **myeloid cells**, which help coordinate immune responses. Adding anti-PD-1 therapy may strengthen this effect even further.

What does this mean for patients?

This research is still early, but it offers hope that future treatments may:

- Improve outcomes for difficult-to-treat sarcomas
- Help more patients benefit from immunotherapy
- Reduce the chance of recurrence after surgery
- Create more personalized immune-based treatment strategies

Important things to know

- BO-112 is still considered **experimental**
- More clinical trials are needed to confirm safety and effectiveness
- The treatment is not yet a standard therapy for sarcoma patients
- Researchers are continuing to study which sarcoma types may benefit the most

Questions patients may want to ask their sarcoma team

- Are there immunotherapy clinical trials available for my sarcoma type?
- Could pre-surgery (neoadjuvant) therapy be appropriate in my situation?
- Is my tumor considered “immune responsive”?
- What are the potential benefits and risks of combining radiation with immunotherapy?
- Are there biomarkers or genetic features that may guide treatment choices?

For the sarcoma community, this study represents another important step toward developing treatments that not only target the cancer itself, but also help the body's own immune system participate in fighting the disease.