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## Trends in the Abscopal Effect After Radiation to Spinal Metastases: A Systematic Review

Sharath Kumar Anand  
asharath@med.wayne.edu

mohamed macki  
mmacki22@gmail.com

Mohamed Fakih  
mofakih@umich.edu

Jaafar Elmenini  
jelmenini@umich.edu

Raviteja Suryadevara  
raviteja05@gmail.com

*See next page for additional authors*

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**Authors**

Sharath Kumar Anand, mohamed macki, Mohamed Fakh, Jaafar Elmenini, Raviteja Suryadevara, and Adam M. Robin

## **Trends in the Abscopal Effect After Radiation to Spinal Metastases: A Systematic Review**

**Authors:** Sharath Kumar Anand<sup>1</sup>, Mohamed Macki<sup>1</sup>, Mohamed Fakhri<sup>1</sup>, Jaafar Elmenini<sup>1</sup>, Raviteja Suryadevara<sup>1</sup>, Adam M Robin<sup>1</sup>.

1. Henry Ford Hospital Department of Neurosurgery, Detroit, MI.

**Introduction:** While the abscopal effect has been previously described, the phenomenon has been poorly defined with spinal metastases. This article presents the first systematic review of the abscopal effect after radiation therapy to metastatic spinal cancer, especially since the spinal column represents one of the most common metastatic locations.

**Methods:** Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [Figure 1] in the Enhancing the QUALity and Transparency Of health Research (EQUATOR) resources, a systematic review identified relevant studies via a computer-aided search of MEDLINE and Embase. Ten publications that met the inclusion and exclusion criteria from the PRISMA flow diagram described a total of thirteen patients.

**Results:** Two patients in two separate articles observed the abscopal effect following radiation therapy alone to the spine. The remaining eight articles commented on the abscopal effect in the setting of both systemic and radiation therapy.

**Conclusion:** Important findings in this review of spinal metastases include (1) abscopal effect is more commonly observed when systemic therapy includes immunomodulators; (2) abscopal effect has a higher likelihood of success when immunomodulators are administered in conjunction with or after radiation therapy to the spine; (3) higher doses of radiation in a smaller number of fractions likely increase the abscopal success; and (4) ionizing radiation to the bone marrow of the spinal column may increase circulating lymphocytes that attack cancerous lesions elsewhere in the body. These trends, however, still require further investigation with experimental and clinical studies.

**Keywords:** abscopal, radiation, spinal metastases