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

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

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HENRY FORD HOSPITAL



Abscopal Effect

- In 1953, RH Mole first described the abscopal effect as regression of tumor remote from the irradiated tissue
- In the *New England Journal of Medicine* publication of 2012, Postow et al popularized the abscopal effect by describing a case of metastatic melanoma resistant to standard cisplatin, vinblastine, and temozolomide

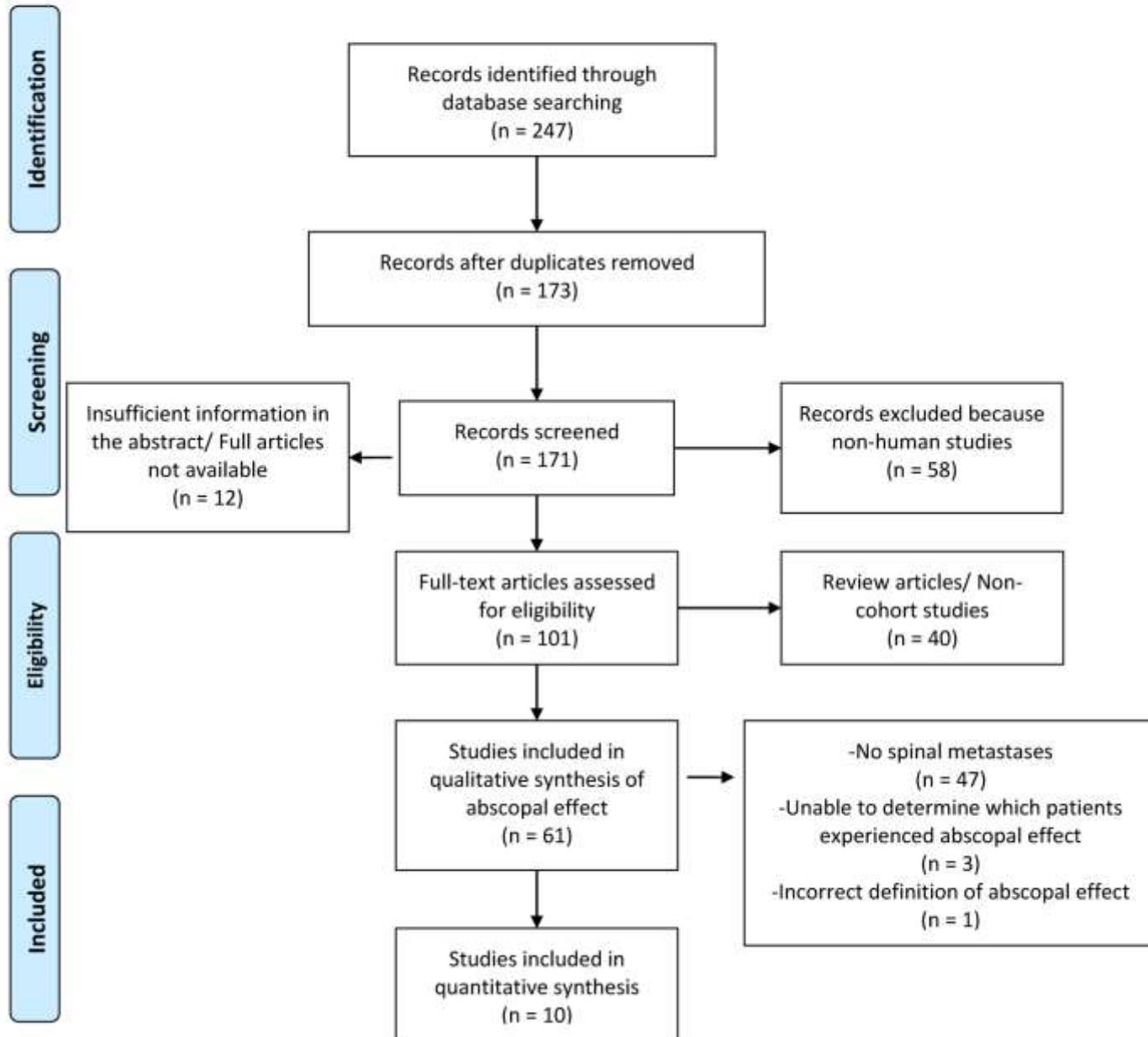


Methods

- A systematic review identified relevant studies via a computer-aided search of MEDLINE (1946 – October 18, 2018) and Embase (1947 – October 18, 2018)
- Inclusion Criteria
 - (1) cases with metastatic and/or hematological cancer to the spine
 - (2) “abscopal” in the title, abstract, and/or keywords.



PRISMA 2009 Flow Diagram



Results

- All 10 articles included radiation therapy to spine
- Metastatic pathology: melanoma, renal carcinoma, invasive ductal breast carcinoma, hepatocellular carcinoma, Hodgkin's lymphoma, squamous cell lung cancer, urothelial bladder cancer, and endometrial adenocarcinoma
- Three authors failed to observe an abscopal effect

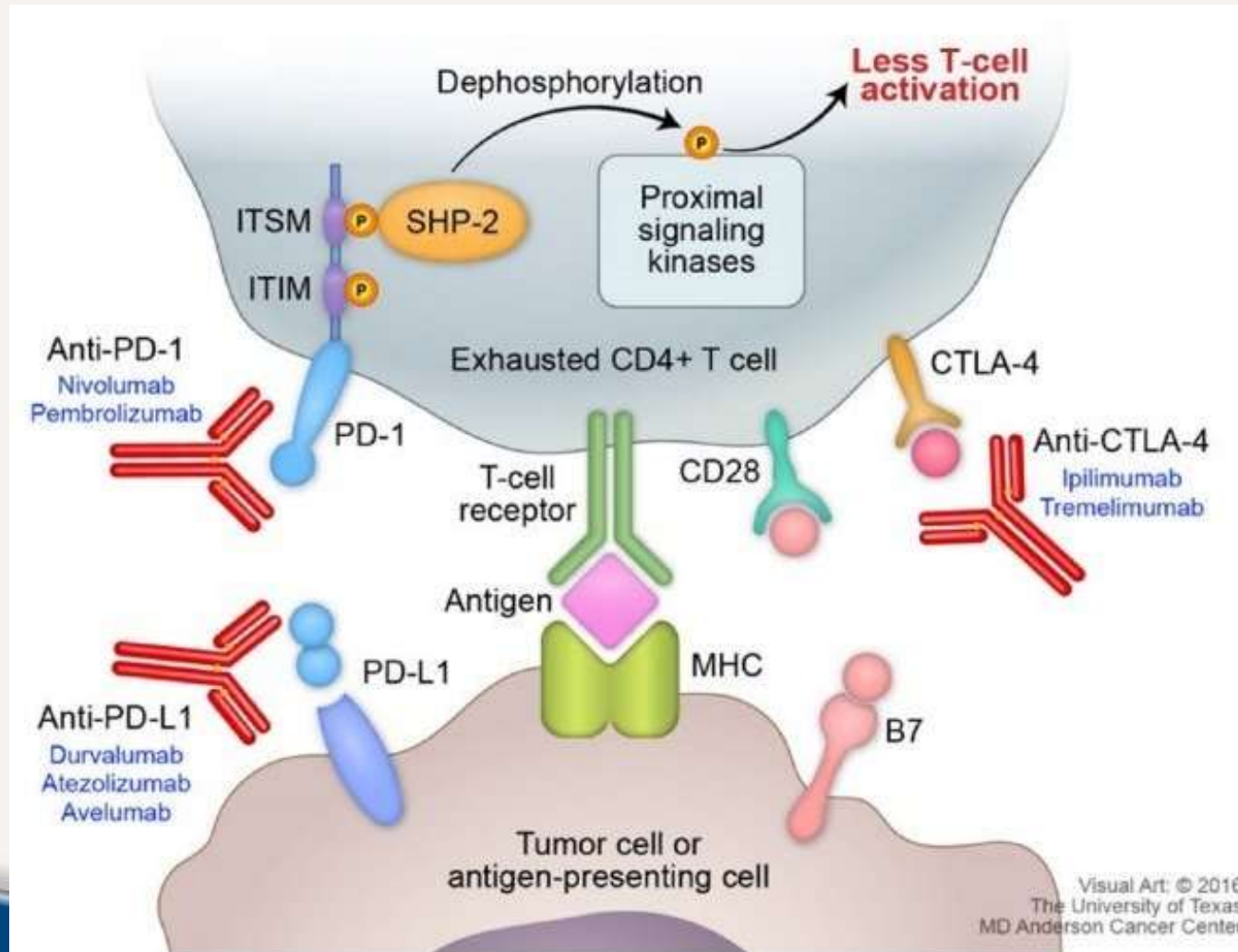
Radiation Therapy

- Mice treated w/ high-dose, hypofractionated irradiation enhances anti-tumoral immunity measured by “tumor microenvironment” and “tumor draining lymph nodes” in T-lymphocytes
- ↑ Gy in a select few fractions, just enough to induce interferon (IFN)-related genes, such as activators of transcription and, thus, signal transducers

Immunomodulators

- Only 46 reported cases of the abscopal effect were published within the 31 articles of a systematic review by Abuodeh et al in 2014
- The subsequent years in this study saw a rise in case reports and case series on abscopal observations with the dawn of immunomodulators.

Immunomodulators



Conclusions

- (1) abscopal effect 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 RT to the spine
- (3) ↑ Radiation in a smaller number of fractions likely increase the abscopal success
- (4) ionizing radiation to the bone marrow of the spinal column may increase circulating lymphocytes that attack cancerous lesions elsewhere in the body.

Thank You



Adam Robin, MD



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