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# Synergistic effects of Radiotherapy and Immune Checkpoint Inhibitors in Cancer Treatment

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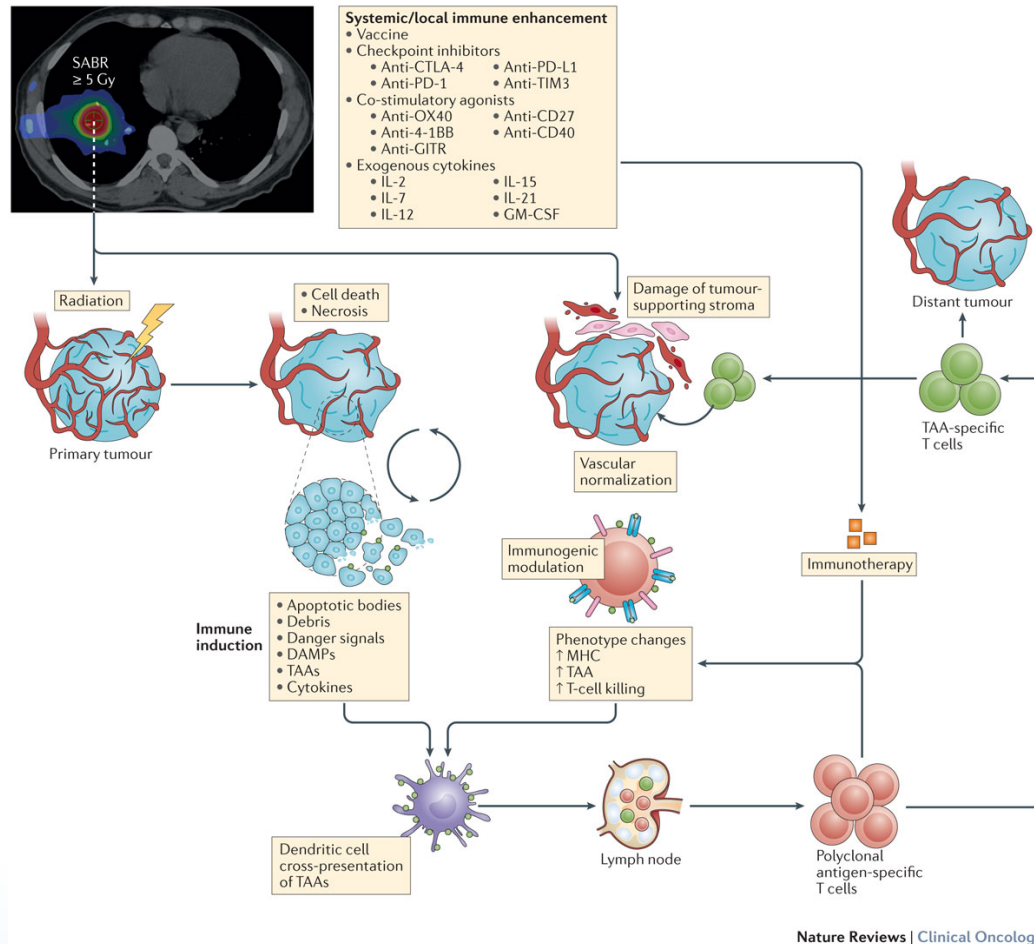
5. Årsoppgave våren 2016

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# Hva betyr tittelen på oppgaven?

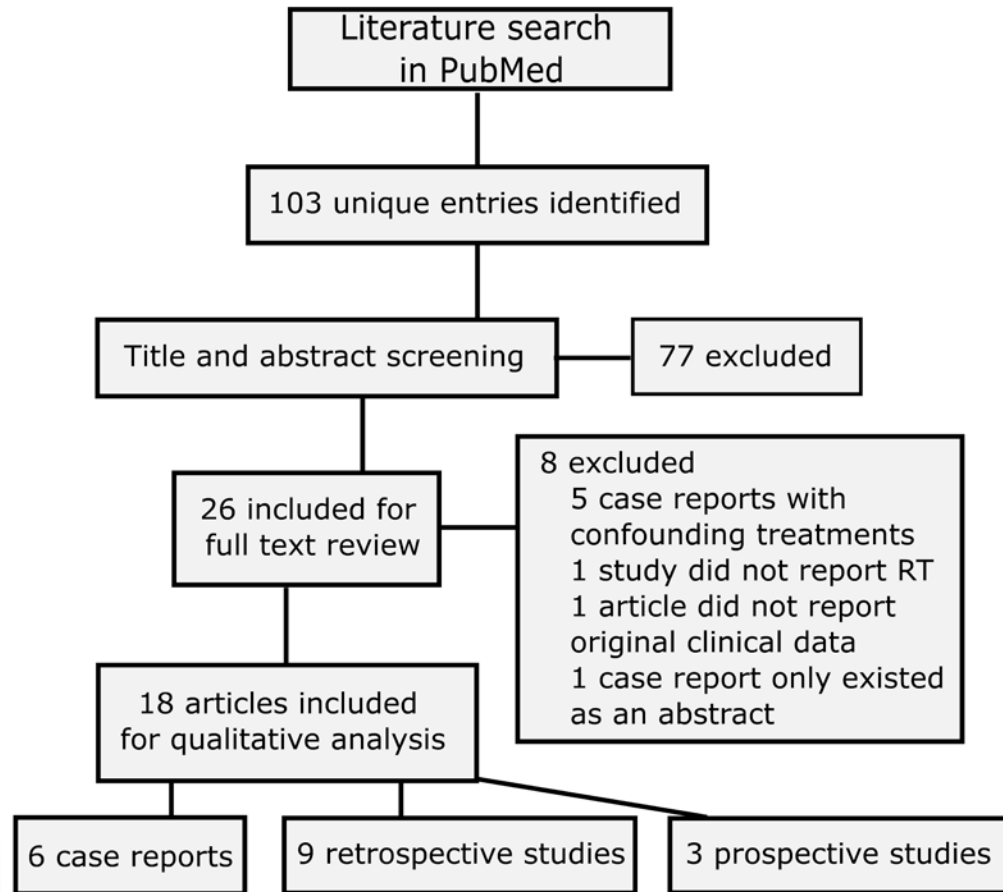


Nature Reviews | Clinical Oncology

Bernstein, M. B. *et al.* (2016) Immunotherapy and stereotactic ablative radiotherapy (ISABR): a curative approach? *Nat. Rev. Clin. Oncol.* doi:10.1038/nrclinonc.2016.30

# Metode

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# Resultater

Cancer type	Age and sex	Radiation regimen, dose/fractions	Target	Checkpoint inhibitor	Sequence	Objective responses	Follow up	Ref.
Metastatic melanoma	33 F	IMRT: 28,5 Gy/3	Paraspinal	Ipilimumab: 10 mg/kg	Ipilimumab then RT, then Ipilimumab	PR: both IF and OF	SD 10 months after RT	Postow et al 2012
	63 F	WBRT: 20 Gy/5	Leptomeninges	Ipilimumab: 3 mg/kg	RT then Ipilimumab	CR: IF PR: OF	SD 16 months after Ipilimumab	Bot et al 2012
	44 M	SRS: 20 Gy/1	Brain	Ipilimumab: 3 mg/kg	RT then Ipilimumab	CR: OF PR: IF	Alive 18 months after Ipilimumab	Du Four et al 2012
	57 M	SABR: 54 Gy/3	Liver	Ipilimumab: 3 mg/kg	Concurrent	CR: IF and OF	No evidence of disease after 1 year	Hiniker et al 2012
	67 M	SRS	Brain	Ipilimumab		CR: IF and OF	No evidence of disease after 4 years*	Stamell et al 2012
Metastatic NSCLC	64 M	IMRT: 30 Gy/5	Liver	Ipilimumab 3 mg/kg	Concurrent	CR: IF and OF	No evidence of disease after 1 year**	Golden et al 2013

Summary of findings in case reports with patients who has received combination therapies of immune checkpoint inhibitors and radiotherapy, and experienced abscopal responses. Abbreviations: M male, F female, IMRT intensity modulated radiation therapy, WBRT whole brain radiation therapy, SRS stereotactic radiosurgery, SABR stereotactic ablative radiotherapy, Gy Gray, RT radiotherapy, CR complete response, PR partial response, SD stable disease, IF in radiation field, OF out of radiation field

\*Had one recurrence managed by surgery

\*\*Underwent an additional re-induction with Ipilimumab between the combination therapy and the complete regression

- 6 case-rapporter med dramatiske responser på kombinasjonsbehandlinger
- 9 retrospektive studier på pasienter (n=238) med metastatisk melanom
- 1 randomisert kontrollert studie på pasienter med metastatisk prostatacancer (n=799) med ingen signifikant forskjell mellom grupper i median overlevelse (11,2 mnd for kombinasjonsbehandling, 10,0)

# Hva betyr funnene?

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- Sannsynlig interaksjon mellom stråling og immunterapien i (i alle fall noen av) de utvalgte caserapportene.
- Uklar relasjon i de retrospektive studiene på malignt melanom. Mulig positiv effekt.
- Ikke klar effekt på overlevelse i den ene store randomiserte studien