

Characteristics of included studies

Author, country	Study design	Tumor type	Patients	Male sex%	Age (years)	Median follow-up	Censoring	Intervention	irCAEs type	Outcomes*
Freeman-Keller2016, America	R	Melanoma	148: E NR, U NR	87/58.8%	NR	138w (resected); 140w (unresectable)	5(at OS analysis)	Nivolumab + peptide vaccine / Nivolumab alone, dose NR q2w	rash, vitiligo	1, 2, 3, 9
Nakamura 2017, Japan	R	Melanoma	35: E9, U26	18/51.4%; E 4/44.4%, C 14/53.8%	E 65.3(40-79), C 68.7(41-85)	NR	2	Nivolumab 2 mg/kg, q3w	vitiligo	1, 2, 3, 4, 5, 6, 7, 8, 9
Akano2019, Japan	R	NSCLC	79: E14, U65	58/73.4%	70 (41-86)	NR	0	Nivolumab 3mg/kg, q2w anti-PD-1 with	rash	1, 3, 10, 11
Quach2019, America	R	Melanoma	318: E120, U198	202/63.5%; E 74/61.7%, C128/64.6%	63(22-89): E63(25-89), C63(22-87)	NR	0	or without ipilimumab, dose NR, cycle	rash, vitiligo, pruritus	1, 3, 11
Lee2019, Korea	R	Multiple cancer	211: E35, U176	137/64.9%; E21/60.0%, C116/65.9%	61(21-91): E59.91±11.93, C59.41±13.06	NR	0	Nivolumab or Pembrolizumab, dose NR, cycle NR	maculopapular rash, dry mouth, urticaria, dry skin, alopecia, hives	1, 2, 8
Aso2020, Japan	R	NSCLC	155: E51, U104	117/75.5%; E42/82.4%, C75/72.1%	68(31-88): E68(36-88), C69(31-88)	NR	10(at PFS analysis), 1(at OS analysis)	Nivolumab 3 mg/kg, q2w or Pembrolizumab 200 mg, q3w	pruritus, rash, erythema, vitiligo skin eruption (macular–popular or eczematous), vitiligo, pruritus, eczema, lichenoid reaction, vitiligo-like	1, 2, 3, 4, 5, 6, 7, 8, 9
Bottlaender 2020, France	P	Melanoma	189: E39, U150	109/57.7%; E22/56.4%, C87/58.0%	64.6(50.0-74.7): E66.1(50-76.4), C64.5(51.1–74.7)	NC	0	Pembrolizumab or Nivolumab, dose NR, cycle NR	pruritus, vitiligo, eczema, lichenoid reaction, vitiligo-like	1, 2, 7, 10, 11
Chan2020, Australia	P	Melanoma	82: E33, U49	51/62.2%	59.9(19-82)	40.7m(NR-47.3)	0	Pembrolizumab or Nivolumab at	pruritus, vitiligo, eczema, lichenoid reaction, vitiligo-like	1, 3, 6, 7, 8
Khan 2020, Europe, North America, and the Asia-Pacific region	R	Bladder cancer	459(IMvig or211), 429(IMvig or210): E NR, U NR	NR	NR	NR	NR	Atezolizumab 1200 mg, q3w	vitiligo, psoriasis, atopic dermatitis	9

R= retrospective; P= prospective; E=Exposed group; U=unexposed groups; NR=not reported; NC=not clear; CR=complete response; PR=partial response; SD=stable disease; PD=progressive disease; ORR=objective response rate; PFS=progression-free survival; OS=overall survival; HR=hazard ratio; CI=confidence intervals.

*Outcomes: irCAEs incidence (1), median time of onset of irCAEs (2), ORR (3), CR (4), PR (5), SD (6), PD (7), HR with 95%CI of PFS (8), HR with 95%CI of OS (9), Kaplan –Meier curve of PFS (10), Kaplan –Meier curve of OS (11)